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Heat-Treating Furnaces of Continuous Type

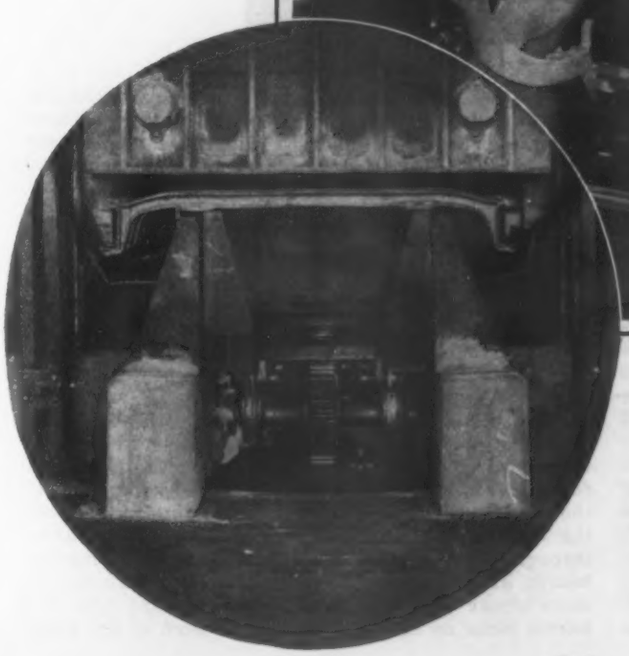
Quality Treating in Quantity—Unique Conveyor Systems at New Steel Treating Plant of Hupp Co.— Brinell Testing of Every Axle

BY GILBERT L. LACHER

HEAT treating involves the consumption of time, the exercise of great care, and close attention. Where quantity output is an important consideration, it is essential that time consumption be reduced to a minimum without sacrificing the quality of the product. In other words, quantity and quality production must go hand in hand. To reconcile these seemingly opposing factors is a difficult problem, but it is not surprising that what appears to be a solution has been worked out by the automobile industry, which has been notably resourceful in the development of repetitive processes. The new heat-treating plant of the Hupp Motor Car Corporation at Jackson, Mich., combines in its construction and equipment those features which are essential in the successful handling of materials in quantity.

New in type and designed for continuous operation are three large Mircs heating system furnace units, in-

Part of Housing (At Right) at Discharge End of Axle Hardening Furnace Removed to Show How Counterweighted Fingers Convey the Axles from the Moving Hearth to the Oil Quenching Bath



The Axle Hardening Furnace (In Circle) Has a Moving Hearth, Having Forward and Up-and-Down Strokes of Six Inches. Propulsion is through gears and cams. To take care of sidewise expansion one cam at each end of the furnace has a smooth surface to permit the saddle rollers to slide over it. Secure anchorage is obtained through the cams on the opposite side, which are grooved to hold the rollers of the saddles above them. To allow for lengthwise expansion of the hearth the saddles at the rear end are bolted in slots

stalled by F. J. Ryan & Co., Philadelphia. Two of these units are for hardening and the third for normalizing. The normalizing furnace is equipped with a continuous pan conveyor. The constituent pans are slightly concave on the top surface upon which the parts to be annealed are placed, and are so designed on the bottom that they hook together. Grooves likewise have been provided on the bottom to fit skid bars on the hearth over which the conveyor slides. The pans and the skid bars, as well as all other metal parts exposed to high temperatures, are fahrite castings.

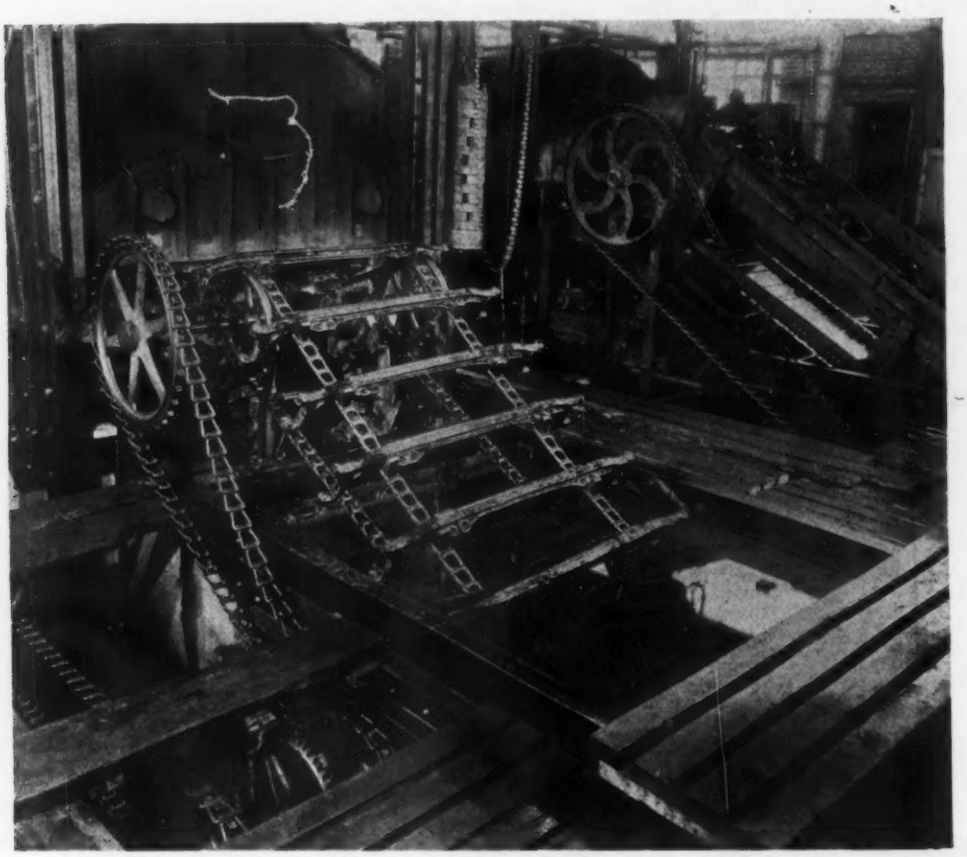
The pans undergo a minimum of strain because they are pushed forward rather than pulled. The wheels at either end of the furnace over which the pan conveyor passes in its continuous cycle are idlers. Propulsion is derived from two parallel hooks on a single shaft which grab projections on the bottom of the pans. The pans are pushed forward 12 in. with each stroke of the hooks. The shaft to which the hooks are attached is located at the end of an arm which is rocked back and forth by a motor-driven crank. At the conclusion of a forward stroke it is, of course, necessary that the hooks be held up against the bottom of the pan conveyor during their return stroke so that they will engage at the proper moment. This is accomplished by parallel floating levers, pivoted on another shaft on the rocking arm. A counterweight on the lower end of each lever holds the upper end against the bottom of the hook. The upper end of the lever has a double flange which engages the hook arm without interfering with its forward or backward movement. The effect of the levers is to hold the hooks up against the pans, but not so tightly as to interfere with their passage across the bottom surface until an engagement has been effected for the next pushing stroke.

The shaft of the idler at the hot end of the furnace is water-cooled. The shaft of the idler at the feeding end is adjustable by screw and nut for expansion and contraction, as well as for wear. Counterweighted lift doors at either end are lowered during operation so that they will barely clear the charge as it passes through on the conveyor. At the discharge end the charge is easily raked into waiting trucks as the pans incline downward over the idler to make their return to the other end of the furnace. All drop forgings or castings which require normalizing are passed through this furnace.

The effective heating dimensions of the chamber of this furnace, as well as those in the hardening units, are 5 x 18 ft. Normalizing temperatures range from 1400 to 1600 deg. Fahr.

Hardening Furnaces in Three Parts

The two hardening furnace units consist of three parts each: a hardening furnace, an oil quenching bath, and a drawing furnace. The unit used for heat treating small parts is equipped with the same type of pan conveyor which has just been described, in both the hardening and drawing furnaces. The forward idlers in the hardening furnace, however, are inclosed in the furnace walls and the door at the discharge end is likewise tightly shut, in contrast with that on the normalizing furnace, because it is essential to hold the parts charged to the hardening temperature up to the very moment that the discharge is effected through a chute into the quenching oil. Most hardening, depending on the chemical composition of the parts heat treated, is done at temperatures within a range of 1500 to 1650 deg. Fahr. In the quenching bath the hardened parts are picked up by a slat-type conveyor and are discharged on the feeding end of the pan conveyor of the drawing furnace. Drawing is generally at temperatures ranging from 800 to 1200 deg. Fahr. The over-all length of the drawing furnaces slightly exceeds that of the hardening furnaces, because the steel does not pick up heat so rapidly at the lower drawing temperatures.



A Sprocket Chain Belt with Special Fingers Carries the Axles Out of the Quenching Tank to the Feeding End of the Drawing Furnace

The second hardening unit is used for heat-treating axles and differs materially from the other furnaces in the design of its conveying apparatus. The hardening furnace, especially, is unique in its construction. At the feeding end is a guide plate which uniformly spaces the axles placed on it. The propulsion of the axles through the furnace is accomplished by a moving hearth, having a forward stroke of 6 in. and an up and down stroke of 6 in. Rising in its forward cycle the hearth picks up the axle in the last notch of the guide

plate and carries it forward 6 in. before depositing it on piers within the furnace. The piers, which are parallel, extend the length of the furnace on each side of the hearth. In its forward stroke the hearth is raised above the piers carrying with it all axles which were resting on them; in its return stroke the hearth is below the level of the piers. The movement of the hearth therefore makes for a periodical forward progression of the charge.

Operation is through two sets of cams which engage saddles bolted to the bottom of the hearth. Two cams are on a shaft toward the forward end of the furnace and the other two on a shaft toward the rear. To allow for lengthwise expansion of the hearth the saddles in the rear end are bolted in slots. To take care of sidewise expansion one cam at each end has a smooth surface to permit the saddle rollers to slide over it. Secure anchorage is obtained through the cams on the other side of the hearth which are grooved to hold the rollers of the saddles above them. The door at the discharge end of the furnace is tightly closed during operations, like that of the other hardening furnace.

As the axles are lifted off the ends of the piers they strike a pair of counterbalanced fingers which convey them into the oil bath evenly so that they are uniformly quenched from end to end. These fingers are so counterweighted that upon the discharge of their burden they immediately return to their normal position at the ends of the furnace piers. This was a necessary precaution because, if the fingers were not of the same temperature as the charge as it leaves the piers, they would cause a cold spot in the axles.

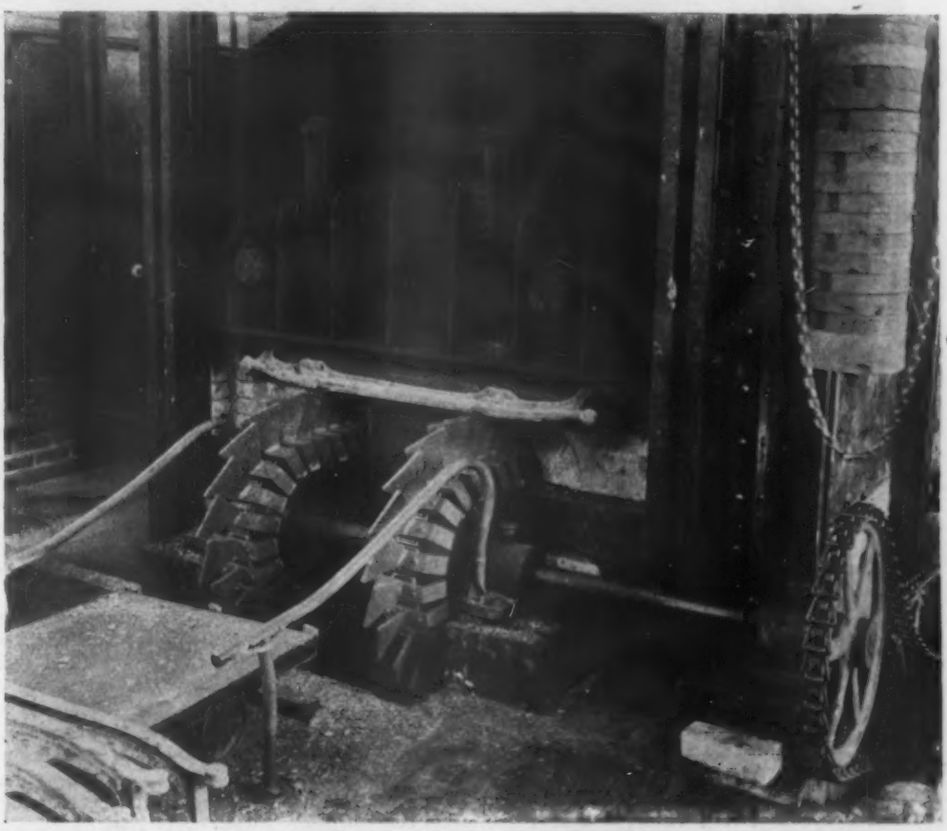
A sprocket chain belt with special fingers carries the axles out of the quenching tank to the feeding end of the drawing furnace. Here they are deposited on a radial blade or finger conveyor which holds the yoke of the axle in the same horizontal plane with the beam so that all parts of the axle are in the same heat zone, thereby acquiring a uniform temperature.

Radial Blade Conveyors

The radial blade conveyor, unlike the pan conveyors, is pulled through the furnace. The radial blades which are askew with reference to the lengthwise and crosswise axes of the furnace are connected with chains which engage sprocket wheels at both ends of the furnace, the wheels being driven by sprocket and chain from a motor. The bottoms of the blades are bent to allow room for a water pipe which cools the blades and chain. The axles are protected from the cooling effect of the pipes by a tile guard which overlaps the bent supporting arms of the blades and the pipes below them.

Axles are delivered from the end of the drawing furnace down skids to waiting trucks. A truck is placed between the skids and is moved toward the furnace as the axles are dropped on it. In this fashion the axles are deposited side by side from one end of the truck to the other. As soon as one truck is loaded another is put in its place.

Each furnace unit, including the normalizing furnace, is driven by Westinghouse variable speed alternating current motor having a range in speed from 600 to 1200 r.p.m. and enabling furnace operators to vary the speed of conveying materials through the furnaces within one to two hours. A single motor drives the conveyors of hardening furnace, drawing furnace and quenching bath of each hardening unit. The radial blade conveyor is chain-driven from the motor shaft while the moving hearth is gear-driven. The oil bath conveyors are chain-driven.

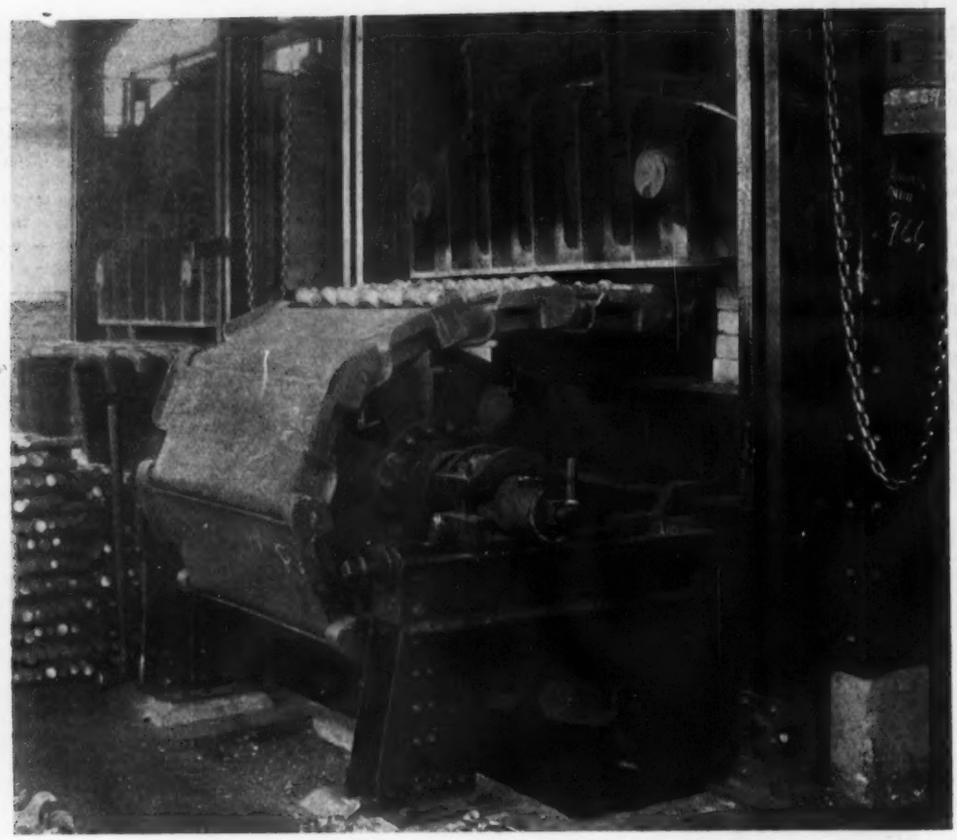


Axles Are Delivered from the End of the Drawing Furnace Down Skids to Waiting Hand Trucks. They are carried through this furnace by a radial blade conveyor. The bottoms of the blades are bent to clear a water pipe extending through the furnace, which cools the blades and connecting chain

The furnaces are built of a high grade of fire clay brick, with the exception of the burner combustion chambers, which are constructed of carborundum brick. Heat is introduced in the top of each furnace and is carried down to the heating chamber through a perforated arch. Vents on the side of the chamber connecting with the atmosphere complete the circulation.

Each furnace has four burners. The fuel used is oil. The drawing furnace of the small parts hardening unit is equipped with Ryan-Austin dual control, so-called because it automatically controls the supply of both the air and oil to the burners. Through this control, it is said, the temperature of the furnace can be held to any given degree. The moment the temperature falls below that desired, the supply of air and fuel is increased, and the converse is true when the temperature rises too high.

Each furnace and each bath is equipped with signal



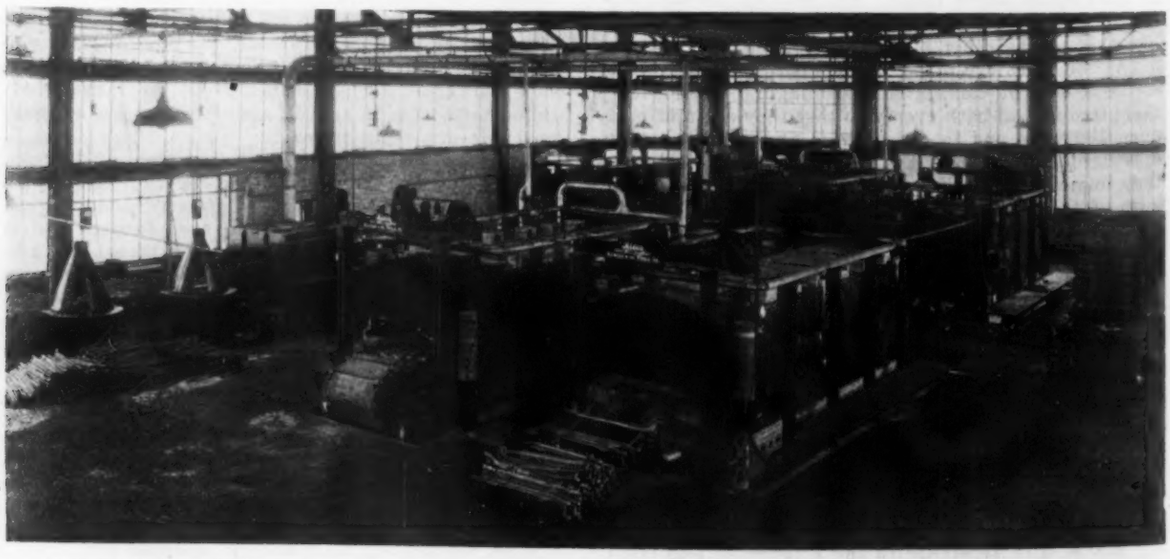
Loading End of Small Parts Hardening Furnace, Showing Continuous "Fahrite" Pan Conveyor and Idler Around Which It Passes. Both furnaces of the small parts heat-treating unit, as well as the normalizing furnace, are equipped with this type of conveyor

lights and Leeds & Northrup "deviation from temperature" indicators. The temperature records of furnaces and baths are recorded by Leeds & Northrup potentiometers situated in the office of the plant.

Speed of the Conveyors

The speed of the conveyors in the oil baths is regulated so that the charges are in the oil an average of 10 min. and never less than 5 min. Ordinarily the smaller parts, which cool more rapidly, are kept in the oil a shorter time than the axles. The quenching oil system is of an entirely new type. Cold oil is introduced at the hottest point near the hardening furnace. Overflowing through a strainer at the other end of the bath, it is returned to a cascade type of cooling tank, where it passes over a succession of plate barriers, each one lower than the preceding one. Placed before each barrier is a coil of cold water, so that a maximum cooling surface has been provided over which the oil passes before it reaches the discharge end of the tank. Goulds centrifugal pumps have been provided for circulating the quenching oil and the cooling water. The water itself is cooled in a spray pond outside the building. By manipulating a valve on the quenching tank and controlling the flow of cooling water, the temperature of the oil bath can be closely regulated. Dirt and scale which accumulate in the bottoms of the quenching tanks necessitate periodical cleaning. To enable workmen to gain access to the tank of the smaller hardening unit, the slat conveyor serving the tank is hinged on its upper shaft so that it may be swung up out of the way. By shutting off the inflow valve and opening a discharge valve at the bottom of each tank, the oil may be drained back to the cooling tank.

Storage for 15,000 gal. of quenching oil and 30,000 gal. of fuel oil has been provided in underground steel tanks, resting in concrete chambers. The roof of the tanks serves as a loading dock between the plant and an adjacent railroad siding. The fuel oil tank is



A General View of the Two Heat-Treating Units. The normalizing furnace is barely discernible in the far corner

A Slat-Type Conveyor Carries the Small Parts from the Quenching Bath to the Draw Furnace

equipped with steam coils so that the supply is never affected by the outside temperature. For drawing fuel oil rotary positive pressure pumps have been provided.

In addition to the large furnaces which have been described, there is a small heat-treating furnace with a heating chamber, 3 x 6 ft., equipped with signal lights, temperature indicator and temperature recording apparatus. This is used for special work, such as the heat treating of tools. There are also a cyanide pot and a lead pot.

All Axles Brinell Tested

After heat treating, the sequence of operations in the plant is cleaning, Brinell testing, gaging, straightening and, if necessary, twisting. All cleaning is done outside of the building in another structure, in order to

The Discharge End of Each of the Hardening Furnaces Is Inclosed to Hold the Parts Charged to the Hardening Temperature Up to the Very Moment of Quenching

All Heat-Treated Parts Are Given a 100 Per Cent Brinell Test. One end of a front axle under a hydraulic pressure machine

keep the heat-treating plant free from dust and dirt. All heat-treated parts get a 100 per cent Brinell test. In handling axles, for example, fixtures have been provided which hold one end of the axle while the other end is undergoing test under a Tinius Olsen Machine Co. hydraulic pressure machine. This machine has a gage graduated up to 6600 lb. After a given pressure is applied, the diameter of the impression made by the 10-mm. ball is measured by means of a microscope provided with a millimeter scale. All parts of the axle which are subject to stress are tested—on both bosses of the yokes, on both pads or flanges, and at two points on the top of the beam directly above the pads. For straightening axles, a flexible power press, manufactured by the General Mfg. Co., Detroit, is now employed.

Much attention was given to natural illumination and to ventilation in the design of the plant. The structure, which is of brick and structural steel construction, measures 75 x 125 ft., and has a height from floor to the eaves of 28 ft. Continuous steel sash has been provided in all four walls as well as in the Pond-type monitor. The monitor sashes, two on each side, are motor-operated. The wall sashes are hand controlled. Connecting the plant with the loading dock are two large motor-operated rolling lift doors. Buggies of steel are conveyed by Ford tractors to and from the Jackson machine works of the company or to and from the loading dock (in the case of material shipped from the Detroit plant).

The various automobile parts which are heat treated and tested in the new Jackson plant include: Front axles, steering knuckles, steering knuckle arms, equalizer pivots, gear shift levers, brake hand levers, oil pump bodies, gear shifter housings, rear axle shafts, rear axle tubes, gear shift forks and clutch release levers.

Ohio Section of Mining Engineers Meets

At the annual meeting of the Ohio section of the American Institute of Mining and Metallurgical Engineers held at the Winton Hotel, Cleveland, March 31, Herbert M. Boylston, professor of metallurgy, Case School of Applied Science, Cleveland, was elected chairman for the ensuing year. L. B. Miller and H. A. Schwartz, Cleveland, were elected vice-chairmen and C. B. Murray, Cleveland, was reelected secretary and treasurer. G. A. Reinhardt, Youngstown, D. J. Demorest, Columbus, and H. K. Donaldson, Case School, Cleveland, were elected to the executive committee. In connection with the meeting a dinner was held in honor of William Kelly, Vulcan, Mich., newly elected president of the institute. Mr. Kelly and D. B. Quarrie, general manager of the Otis Steel Co., discussed the work of the institute.

One-Piece Hearth for Rivet Forges

Standardization of a one-piece 24-in. hearth of No. 14 gage pressed metal has been adopted by the Buffalo Forge Co., Buffalo, in its line of rivet forges and hand and power blowers designated as Nos. 222, 212, 312, 512, 522, 712, 722 and 062. This new one-piece hearth will take the place of the cast iron and the built-up steel hearths.

As there are no seams in which water can accumulate, the one-piece hearth eliminates rusting from this cause. Decreased weight, long serviceability and added size of the new hearth over those formerly employed are features emphasized by the makers.

Excellent Natural Illumination, as Well as Ventilation, Are Provided by Continuous Sash in All Four Walls and in the Roof Monitor. Water for cooling the quenching oil is itself cooled in the spray pond shown in the foreground

STEEL BASE FOR TIN PLATE

Effect of Titanium Copper in Eliminating Perforations

For many years the relation of the quality of tin plate to the value of cans for food products in service has been under discussion. The troubles experienced by canners have been ascribed to different factors and a good deal of experimental work has been done by individual canners and can manufacturers. In 1915-17 a committee representing the National Canners Association, the American Sheet & Tin Plate Co. and the American Can Co., with assistance from the Bureau of Chemistry of the United States Department of Agriculture, conducted an investigation on the effect of weight of tin coating on the value of tin plate for food containers. This committee found that for most uses the value of the tin plate was practically the same with weights of coating of 1 to 3 lb. of tin per base box. This did not hold, however, for resistance to perforations.

In 1917 a second committee was formed to investigate the effect of various treatments of the steel of tin plate on its resistance to perforation to acid products. The original members of the committee were: H. A. Baker and W. S. Sellars of the American Can Co.; W. D. Collins, Bureau of Chemistry; W. D. Bigelow and F. F. Fitzgerald, of the National Canners Association, and G. A. White and G. F. Comstock of the Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

The foregoing facts are found in an introduction to a 296-page pamphlet entitled "Canned Food Containers," by the National Canners Association, Bulletin 22-L. It is characterized as a study with special reference to the influence of the steel base on resistance to perforation. The report contained in this bulletin has been prepared chiefly by W. D. Bigelow, W. D. Collins, G. F. Comstock, F. F. Fitzgerald and A. E. Stevenson. Owing to changes in location, some members of the original committee dropped the work for a time and returned to it, while others dropped out permanently. Extracts from the introduction and the summary of conclusions which involve some interesting information, are given in the following:

General Plan Pursued

The studies involved service tests with foods canned commercially in containers made of tin plate of known history from the charging of the open-hearth furnace for the steel base through the various steps until the plate was finished. Every step in the manufacture of the steel, tin plate and cans and in the jacking of the foods was followed by the committee. For instance, in the manufacture of the steel for tin plate, materials used were weighed under the supervision of committee members, who made records of temperature, took samples for analysis, and throughout the work were present at every point where confusion of lots of material might occur. Except where some special procedure is noted, all operations followed regular commercial practice and were carried out by the regular employees of the various plants. These general principles of operation cover the whole experiment and are not repeated in connection with the detailed description of the different steps of the experiments.

Effect of Titanium and Copper

The investigation was primarily a study of the influence of titanium in the manufacture of steel as a base for tin plate for food containers. At the same time advantage was taken of this opportunity to study the effect of copper on the steel base and the effects of different weights of tin coating. The 1917 experiments seemed to indicate that, in general, steel from heats which rose the most in the mold gave poorer service than that from heats which rose less. In the 1919 experiment, therefore, silicon was added in some molds to prevent this rising.

Summary and Conclusions

The outstanding feature of the investigation is that no tin plate made from any heat of steel, regardless of the method of manufacture, chemical composition, or weight of coating, gave service indicating a satisfactory solution of the problem of perforations. Within the limits of these experiments the following specific conclusions, however, were reached concerning factors which influence the service value of tin plate:

1. The use of titanium as a ladle addition in the manufacture of steel increases the resistance of tin plate to perforation.
2. Increased weight of coating increases the resistance of tin plate to perforation.
3. The results obtained with the use of copper do not offer any justification for the addition of copper to steel for the manufacture of tin plate, neither do they constitute a reason for specifying the absence of copper in such steels.
4. The use of silicon in the mold causes a large waste in the manufacture of tin plate and also reduces the resistance of the tin plate to perforations.
5. The resistance of tin plate to perforation is influenced to a greater or less extent by the furnace practice, by the chemical composition of the steel with special reference to the content and segregation of phosphorus and sulphur, and by other factors.
6. Discoloration of cans and contents is not influenced by variations in steel base or weight of tin coating. The factors which control the resistance of tin plate to perforation appear to have no relation to the discoloration of cans and contents.

The resistance of tin plate to perforation depends upon so many factors, some of which are entirely unknown, that it is impossible to predict the service value of any can or lot of plate, even though complete data on the steel and coating may be available.

Although increased weight of coating on a sheet of steel will give increased service value over that which would be obtained with coke coating on the same sheet, and although titanium treatment of a single heat of steel will give a product having greater resistance to perforation than the same heat of steel not so treated, nevertheless, a tin plate made from one steel with a light coating may offer greater resistance to perforation than a tin plate made from another steel with a heavier coating. Likewise, a heat of steel treated with titanium may have lower service value than another heat not so treated.

This is illustrated in the experiments by the fact that the commercial open-hearth and Bessemer plate purchased on the open market gave better service value than any of the experimental plate manufactured. This cannot be taken as an exception to the statement that titanium treatment improves the quality of steel. At the same time, the example shows that the use of increased weight of coating or the titanium treatment of the steel does not of itself insure the delivery of a product of high service value. The same reasoning applies to other factors.

Although other factors have a deciding influence on the service value of tin plate, nevertheless, tin plate made from titanium-treated steel will give a higher service value than tin plate of the same heat of steel without cleansing treatment. The pamphlet is profusely illustrated with photomicrographs, charts and statistical data.

G. A. Swineford Co. Taken Over

The G. A. Swineford Co., Canton, Ohio, manufacturer of hay tools, pulleys, shovels and rakes, has been taken over by James H. Hughes and associates. Mr. Hughes, who becomes president, succeeding Mr. G. A. Swineford, was for a number of years a salesman in the Cleveland office of the Carnegie Steel Co., later was manager of the steel and tube department of the Timken Roller Bearing Co., Canton, and more recently has been assistant general manager of the Apollo Steel Co., Apollo, Pa. Folkert A. Schmidt has been chosen secretary and factory manager. He goes to Canton from a Cleveland engineering firm. He will have charge of reorganization of the plant. New buildings and equipment are to be added.

French steel output in January was 541,022 metric tons of which 5175 tons was electric. The January pig iron output was 585,978 tons, of which 5275 tons was made by the electric process.

John J. Eagan Leaves Stock to Employees—Follows Golden Rule

BIRMINGHAM, ALA., April 8.—The will of John J. Eagan, Atlanta capitalist, former president of the American Cast Iron Pipe Co., Birmingham, who died recently, was filed in Atlanta for probate Monday. It carries out the pledge made a few years ago to conduct the business by the Golden Rule. Mr. Eagan bequeathed his entire holdings of common stock, 1085 shares, to the employees of the company. A trust fund is established and income and dividends will be used to supplement wages and if incapacitated by accident or sickness to assist the men and assure them a living wage. He stipulates that all products be sold with only a reasonable profit.

American Rolling Mill Co. Sells Railroad

The American Rolling Mill Co., Middletown, Ohio, has disposed of the Ashland Coal & Iron Railway to the Chesapeake & Ohio Railroad Co. The property consists of 31 miles of railroad tracks running from Ashland to Seaton, Ky., and has been used by the C. & O. as part of its main line from Ashland to Louisville. The purchase price of the property was $4,100,000, payable in cash, one-third down, one-third in 12 months and one-third in 18 months. The property was acquired several years ago in the deal by which the American Rolling Mill Co. took over the properties of the Ashland Iron & Mining Co. The railroad property has a bond issue of $300,000 outstanding against it, which will be redeemed by the American Rolling Mill Co. when due in 1925.

Earnings of Wheeling Steel Corporation

Net earnings of the Wheeling Steel Corporation and subsidiary companies from operations for the year ended Dec. 31, 1923, were $8,598,920, this after deductions of $3,700,000 for plant maintenance and repairs. Other income amounted to $516,646, bringing total net income to $9,115,566. Depreciation, depletion and interest charges aggregated $3,864,136, leaving net profits for the year of $5,251,430. Dividends of $1,776,697 were paid and the surplus for the year was $3,474,733. Total surplus as of Dec. 31, 1923, was $9,645,022, this including $159,387, the surplus of the Consolidated Expanded Metal Companies, stock of which not previously owned by the Wheeling Steel Corporation was acquired during the year.

Production statistics make the following comparison with those for 1922:

	1923	1922
Ore, gross tons	144,417	397,172
Coal, net tons	1,267,714	715,496
Coke, net tons	873,102	587,788
Pig iron, gross tons	674,356	472,339
Ingots, gross tons	869,047	680,341

Sales of the corporation, exclusive of intercompany shipments totalled $71,738,502 in 1923, as compared with $47,926,052 in 1922. Increased use of the inland waterways is disclosed in a jump of 120 per cent in the freight carried by river craft, this amounting in 1923 to 891,872 tons. Total payrolls for 1923 were $29,354,608 to an average number of employees of 16,583 against $17,158,857 to 10,986 employees in 1922.

The report notes that notwithstanding an improved rate of operations, the costs of production were not lowered proportionately, because of a horizontal wage increase of approximately 10 per cent that was made in April, and additional labor cost caused by the elimination of the longer than 10-hr. day, entailing, as it did, a general increase in the rates of workmen paid by the hour.

The work covered by the construction program referred to in the two previous years' reports was diligently prosecuted throughout the year and this work is now nearing completion. The rod and wire plant at Portsmouth is in successful operation. The machinery is functioning in a satisfactory manner and fully meeting the expectations of the builders and the management. The construction work at Steubenville has been largely completed. The new blooming mill and new sheet bar mill are in successful operation; the changes in the open-hearth department are nearly completed and this department in February, 1924, made a record tonnage. It will only be a few months until the plant will be producing the tonnage for which it was designed and for which the large expenditure was made, and it will then be unnecessary to purchase steel from outside sources excepting in limited tonnages.

The river transportation facilities of the corporation are being constantly expanded, with steadily increasing benefits. During the year 1923 its fleets moved freight tonnage aggregating approximately 900,000 tons. It has been decided to establish a distributing warehouse at Memphis, Tenn., and a site has accordingly been acquired. The plan contemplates shipping by river to this warehouse and reshipping to points of final destination either by rail or river. This will entail, in addition to the cost of the warehouse building, the purchase of additional river craft, but from every prospect the undertaking promises to be profitable.

Japanese Metallurgists Addressing Chapters of Steel Treaters

Dr. Kotaro Honda, professor of physics and metallurgy at the research institute of iron, steel and other metals, Imperial University, Sendai, Japan, has been visiting the various industrial centers in the United States on his way to spend the summer in Germany, France and England. Traveling with Dr. Honda are two of his associates, lecturers in metallurgy, Hiromu Takagi and Tokujiro Matsushita. These gentlemen have been the guests of various chapters of the American Society for Steel Treating where they have visited.

On Wednesday, April 2, in Cleveland, Professor Honda was the guest of honor of the American Society for Steel Treating at a luncheon at the University Club and on Wednesday evening he delivered an address on the "Theory of Quenching" in the lecture room of the Case School of Applied Science.

From Cleveland the visitors went to Pittsburgh where they were met by a committee from the Pittsburgh chapter of the society consisting of past-president, T. D. Lynch, Chairman W. J. Merten and Chairman-elect Duray Smith. They visited many plants in Pittsburgh and vicinity and on Friday evening, April 4, were the guests at a dinner and reception at the Pittsburgh University Club, after which Dr. Honda delivered an address before the chapter in the auditorium of the Bureau of Mines.

The Philadelphia chapter of the society will entertain the distinguished savants at a dinner on Wednesday evening, April 9, and Dr. Honda will address the members in the assembly room of the Engineers' Club.

From Philadelphia they will go to Washington, where they will be the guests of Dr. George K. Burgess, director Bureau of Standards and president of the American Society for Steel Treating.

From Washington they will proceed to New York and will attend a meeting of the New York chapter on Wednesday, April 19, sailing from New York on April 21 to attend the May meeting of the British Iron and Steel Institute to be held in London. This will have been the first meeting of the institute that Professor Honda has attended since receiving the Bessemer medal in 1921. Dr. Honda previously studied two years in Germany and expects to renew his old acquaintances abroad.

The party plans to return to Japan through the United States in September and have arranged their itinerary so that they will be present in Boston during the convention and International Steel Exposition of the American Society for Steel Treating. Dr. Honda and his associates have prepared papers for presentation at that time.

The H. Sofransey Co., Finance Street, Allentown, Pa., owner of the Topton, Pa., blast furnace plant, is reported to be planning for the remodeling and conversion of the works into a foundry, to specialize in the production of sash weights, soil pipe and other iron castings.

Coke Plant at Troy to Have New Features

Elimination of Upper Horizontal Flue and Somewhat Different Layout of Heating Flues Characterize American Oven

THE by-product coke plant to be built at Troy, N. Y., by the newly organized Troy Coke & Iron Co., is the design of the Foundation Oven Corporation, a subsidiary of the Foundation Co., 120 Liberty Street, New York. The Foundation Co. was one of the prime movers in the organization of the Troy Coke & Iron Co., which as reported in THE IRON AGE of April 3, page 1027, will take over part of the property of the Burden Iron Co., Troy, reconstructing the blast furnace and adding a 44-oven by-product coke plant.

Only one coke plant has thus far been built by the Foundation Oven Corporation, that consisting of 30 ovens at Anyox, British Columbia, about 90 miles north of Prince Rupert. This plant is operated by the Granby Consolidated Mining, Smelting & Power Co., and was built four years ago. It uses Cassidy coal mined on Vancouver Island, washed at the mines and transported by barge to Anyox. The entire output of the ovens at Anyox is used in the smelters of the Granby company.

While not differing materially in structural design from other by-product coke ovens, the distinctive feature of the American oven, as the product of the Foundation Oven Corporation is known, is the elimination of the upper horizontal flue and a somewhat different layout of heating flues, by which the heating gas is burned in each alternate flue, the intermediate flues returning the gases along every heating wall in the battery. This plan does away with the upper horizontal flues, and it is claimed that the absence of this upper horizontal flue gives an exceptionally strong wall construction and permits of building the ovens higher than is usual, thereby obtaining a high charging capacity with a narrow oven chamber.

This heating system, its designers say, gives a substantially continuous heat supply throughout the length of the walls and thereby a continuous positive coking process throughout the oven length and from both sides of the charge. It is further claimed that this continuous heating gives a uniform coking rate and a minimum of fingered coke on a given coking time through having the entire wall under heat without regard to reversals in the regenerating chambers.

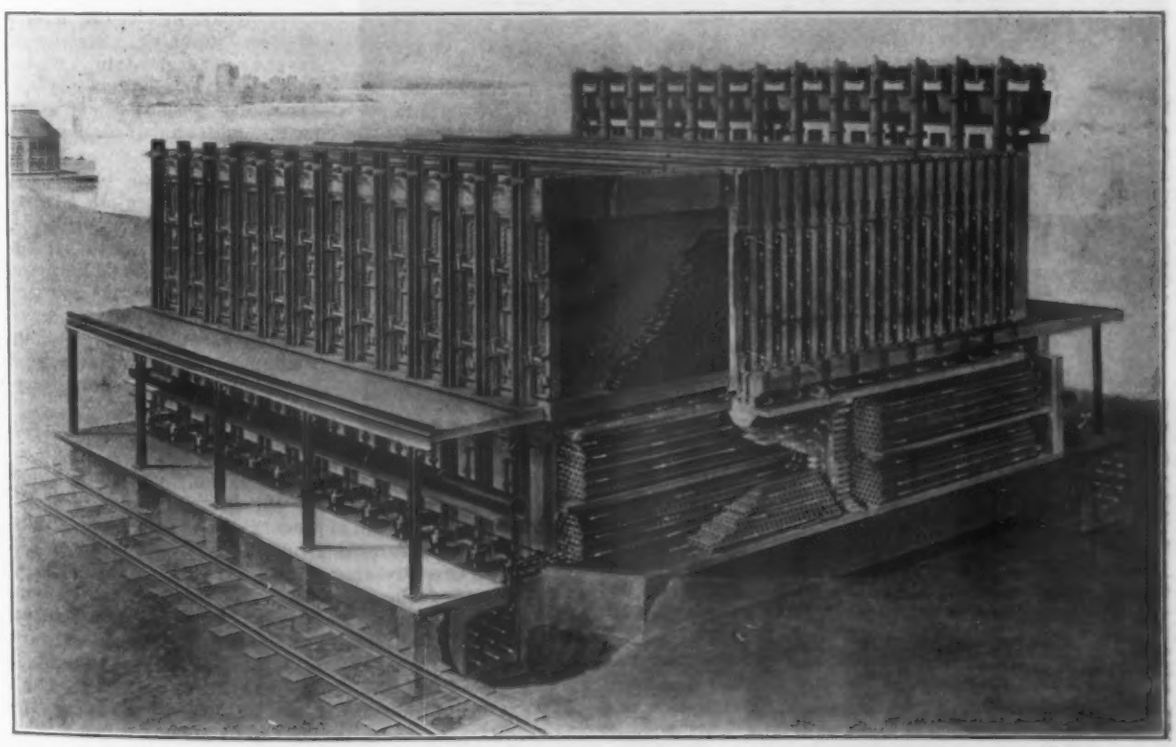
The reversing mechanism, by which the periodic reversal of flow and combustion in adjacent flues is controlled, is of simple construction. There is just one machine for reversing both the gas cocks and the air and waste heat reversing valves. The cables are carried around the end of the battery, making a continuous pull on the machine and eliminating counterweights.

The general dimensions of the American oven are those of standard practice in coke oven design in this country. This includes such dimensions as thickness of the wall, the size of the bricks composing the wall, the average size of the ports for gas and air, the location and size of the inspection holes in the roof and the weight and size of bricks in the regenerators.

The regenerator space under each oven is divided into two compartments, each acting, however, in the same direction, and each handling at the same time the air or waste heat gases to or from the flues in its corresponding half of the two adjacent heating walls. The opposite direction of flow is going on in the entire regenerator under the next oven, which is in turn connected with the alternating flues in its two adjacent heating walls. Heating reversal is made by reversing the flow direction in the regenerator under alternating ovens. This arrangement makes possible the reversal of heating in adjacent heating flues.

Plan of the Regenerator

Each compartment of the regenerator space is divided into an upper and lower section to provide



In Every Other Flue for the Length of the Oven, the Gas Is Burned and at the Top Returns in the Intermediate Flues. At reversals, these outgoing flues become combustion flues and the others serve as the waste-gas flues. All the regenerating surface under a given oven is heating air, while that under the adjoining oven is taking heat from the waste gases

long travel for the air or waste heat. The checkers are laid up so that the passages for the air run horizontally, resulting in a low pressure drop through this regenerator, it is claimed. The horizontal baffle in the regenerator halves is a necessary feature of this oven design. It is made necessary by the sole flue in order to provide for complete utilization of the regenerative material. The half length sole flues in turn perform a distributive function for the air supplied to the heating flue pairs and thus of the heat supply to the entire wall oven areas.

The air is drawn into the lower half of both compartments of the regenerator simultaneously by means of ports in the top of the reversing valve at each end of the oven. The heated air travels horizontally through the regenerator into a sole flue, where it is distributed as required into the base of each alternate flue. Peep holes are provided for inspection and for obtaining temperature readings of the air delivered to the vertical flues.

Gas is introduced into the oven through a four-way cock located at the end of each oven, and is led by means of two ducts to below the base of the vertical flues, where it rises through ducts and nozzles and meets and mixes with the air. The openings to these combustion flues above the nozzles are square in cross section. The gas supply to each pair of flues is controlled by nozzles having different size holes, this being made necessary by the fact that the fuel gas becomes heated in passing through the gas duct in the brickwork and that as a consequence a nozzle of the same size would deliver a less supply of gas to the center flues than to the flues nearer the face of the battery. One duct introduces gas into each odd numbered flue while the other duct feeds the gas into each alternate or even numbered flue. These ducts are operated alternately, one being in use and the other shut off for a period of approximately one-half hour.

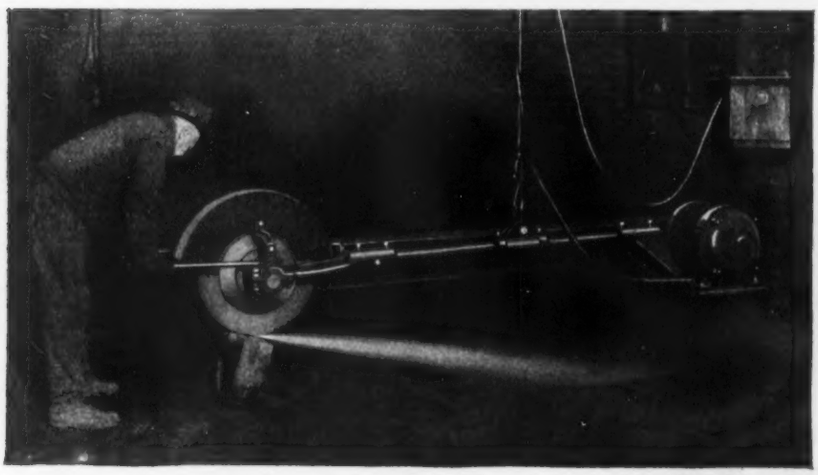
The flame during the first half hour travels up one vertical combustion flue through a connecting port and down the immediately adjoining flue, from which it enters the sole flue under the adjacent oven. It then passes through the checker work and the reversing valves at each end of the oven into the waste heat duct, from which it is drawn by the stack. Both waste heat flues along the battery leading to the stack are kept drawing at all times, each on one-half of the waste gases. This permits of using relatively small waste heat ducts.

Upon reversal of the oven the direction of travel of burning gases through each pair of vertical flues is simply reversed. Then the flow of the gases and air is from the regenerator on one side to that on the opposite side of the oven wall. This is accomplished by turning the flue ports to the regenerator from right to left at the bottom of each alternate flue.

The designers say that the ability to return the off-gas in flues immediately adjacent to the combustion flues makes it possible to control the wall temperature accurately at every point along the length of the oven. The gas supply and temperature required by each particular width of charge can therefore be furnished and the entire contents of the oven, regardless of their thickness, coked uniformly in the same time. In addition the temperature at each end of the oven is not influenced, it is stated, by the temperature, draft and fuel gas requirements of the other end. This control is said to prevent undercoking of the charge at the wide end and overcoking in the center and at the narrow end, resulting, it is claimed, in increased gas and coke yield, improved quality of products, easier pushing, higher by-product return and less fuel gas consumption.

High-Speed Swing Grinding Machine

A heavy-duty ball-bearing snagging swing grinder employing rubber bonded wheels, recently developed and for which it is said there is at present little suitable equipment, has been placed on the market by C. A. Fox, Oakmont, Pa.



A Rubber Bonded Wheel Running at 9000 Ft. Per Min. Is Employed. Greatly increased output is claimed

Greatly increased output is claimed for the machine. The wheel is driven by an endless belt from a 15 hp. ball-bearing mounted motor and runs at 9000 ft. per min. On open-hearth steel castings the machine is said to have removed 40 lb. of metal an hour. A 24 in. x 3 in. wheel is used. The ball bearings are inclosed in a dustproof case in the wheel housing and are packed in grease, the supply of which is sufficient for from 4 to 6 months operation. There being only two bolts and the flange nut to remove when changing wheels, this operation may be done quickly. All cast parts of the machine are of open-hearth steel castings.

Steel Treaters' Handbook

The American Society for Steel Treating recently initiated the issuing of a handbook. It is cumulative in its nature in that sections are being mailed to members at different periods and on different subjects which can be added as loose leaves to those already received. The general plan of the handbook is to divide it into various sections according to the letters of the alphabet. Section A covers general data. Under section M, high-speed steels, there has already been issued some recommended practice for the heat treatment of 18-per cent tungsten high-speed steel and under section N, covering tool steels and tools, there has been issued recommended practice for plain carbon tool steel. Other sections under which data sheets have already been issued include section S on pyrometry and section V on mechanical, magnetic and other testing.

A complete study of iron ore beneficiation is being made by the Department of the Interior, through E. W. Davis and T. T. Read, engineers of the Bureau of Mines, states E. A. Hersam in a report on "The Status of Research in Ore Dressing," recently made to the Milling Committee of the American Institute of Mining and Metallurgical Engineers. Magnetic concentration is being investigated to extend its application to deposits not now treated by this agency. Alteration of the magnetic susceptibility of the iron minerals is receiving attention; also processes for increasing or modifying the characteristic susceptibility of components of the ores, capable of being rendered separable. Table concentration and other standard processes applied to other ores are receiving careful study.

New Portable Pipe Threading, Cutting and Reaming Machine

A portable pipe threading, cutting off and reaming machine, known as the Willie Williams, the features of which include ease of dismantling and reassembling, the incorporation of a self contained emery wheel grinder and three types of drives, motor belt and hand, has been placed on the market by the Williams Tool Corporation, Erie, Pa.

The capacity of the machine is for pipe from ¼ to 2 in. inclusive, and bolts and rods from ⅜ to 1½ in. The longest run of thread at one chucking is 10½ in. By sliding the die head off, mounting one end of a flexible shaft in the chuck and attaching the other end to a hand stock, the machine may be used to thread pipe up to and including 8 in.

Convenient Portability and Ease of Dismantling Are Features. Three types of drive, motor, belt and hand, have been provided

The weight of the machine complete with motor and standard equipment is 520 lb. It is claimed that the machine may be knocked down in 2½ min. and reassembled in 4 min. The oil trough and cutting pan may be lifted off, permitting the carriage and head to be slid off the ways. The latter, which are of seamless steel tubing ground to 0.01 in., may be removed from the headstock by slackening two tension screws, leaving only the pedestal and headstock, which may be conveniently moved.

The machine takes power from the ordinary light socket. A standard 1-hp. motor is employed, and it is mounted on a hinged table in the base and connected by belt to the driving pulley. The method of raising the motor to release the belt and stop the machine is a feature emphasized, a demountable hand crank being used for the purpose. Automatic adjustment to compensate for belt stretch is provided. The machine may be converted to belt drive by removing the motor and driving directly from the line or countershaft. In operating the machine by hand the gears are shifted to the neutral position and the demountable crank handle fitted to the worm shaft. The latter drives the spindle through a worm and worm wheel with ball thrust bearing which operates in oil.

The spindle has two speeds arranged in a manner similar to automobile sliding gears, neutral position being provided so that the spindle may be started or stopped without shutting off the current. Gears are of steel, machine cut, heat treated and run in oil. The shafts run in hard babbitt self-oiling bearings. The spindle is of extra heavy seamless steel tubing ground to size. It has a 2⅞ in. bore which permits a 2 in. coupling to pass through it.

The front gripping or driving chuck is the company's standard, three-jaw universal self-centering type. The pinions and scrolls are of steel, heat treated and ground, and the chuck jaws are of tool steel. The chuck wrench may be used in three different points on the chuck. A three-jaw, self-centering scroll chuck for centering long lengths of pipe is mounted on the rear of the spindle, and is operated by hand wheel.

The carriage ways are of extra-heavy seamless steel tubing and are ground to size and highly polished. The way at the front of the machine has gear teeth milled on its surface which engages a pinion shaft for operating the carriage. The die head and carriage are cast in one piece to prevent the head getting out of alinement. The carriage has six bearings on the ways, three on each side, which are lined with hard babbitt.

The dies are interchangeable and are operated by cam and lever. Four sets of pipe dies are furnished as standard equipment. In changing dies it is only necessary to loosen two nuts on the face of the die head, so that the plate may be shifted and lifted from the head. Die adjustment is controlled by a special one hand lock with corrugated hand wheel, which puts tension on a brass plug bearing on the finished surface of the die head. For threading a quantity of pipe of the same size an adjustable stop with micrometer adjustment may be used, this permitting the setting of the die head without reference to the marks on the cam. Dies expand far enough to permit pipe and coupling to pass through the die head.

The cut-off attachment is mounted on the rear of the die head and is operated by screw and handwheel. A V-block having tool steel facings is employed to steady the pipe during the cutting off operation. The cut-off blade is of tool steel. The reamer holder is pivoted on the cut-off attachment and is operated by a lever. It is arranged so that the pipe may be reamed inside, and if required, a slight champer may be made on the outside. The tool bit used is 5/16 x 5/16 in. high-speed steel.

A rotary geared oil pump taking oil from a reservoir in the base of the machine delivers it to the dies and cut off tool. The emery wheel, which is mounted on the pulley shaft at the rear and driven direct from the motor, is intended for simple grinding of dies or tools. The size of the wheel is ¾ by 6 in. and runs at approximately 1100 r.p.m. A die cabinet cast in the top of the pedestal provides storage space for dies and small tools.

Malleable Castings in February

WASHINGTON, April 2.—The Department of Commerce announces statistics on the production of malleable castings manufactured for sale by months, May, 1923, to February, 1924. The returns indicate only those castings manufactured for sale as such and do not include those used in the plant or finished and sold as other products.

Figures are also shown comparatively for June to February, inclusive, covering the operations of 107 identical plants for which reports were received each month.

Year and Month 1923	Plants Reporting (No.)	Total Production (Tons)	Total Shipments (Tons)	Orders Booked (Tons)	Monthly Capacity of Plants (Tons)	Per Cent of Total Capacity Operated
May	99	64,726	62,806	52,898	91,174	71.0
June	109	65,168	64,608	42,067	96,240	67.7
July	112	57,881	60,102	41,723	98,241	58.9
August	116	68,069	65,405	39,830	103,068	66.0
September	116	60,930	59,396	38,636	101,750	59.9
October	116	62,238	59,129	48,621	103,837	59.9
November	125	52,727	49,426	37,231	107,350	49.1
December	126	49,724	46,664	45,012	106,825	46.5
1924						
January	127	64,379	66,479	73,964	109,798	58.6
February	126	65,829	59,676	62,562	106,301	61.9

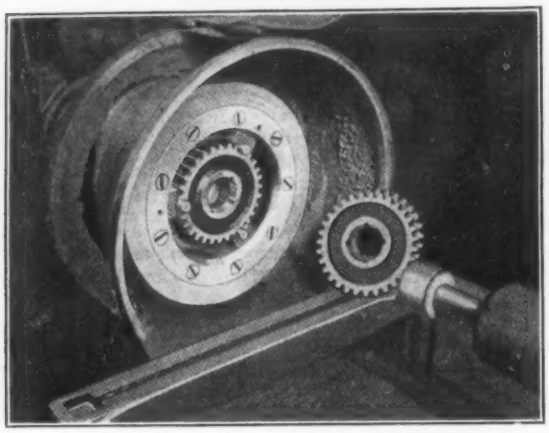
Comparative Summary for 107 Identical Plants

Year and Month 1923	Plants Reporting (No.)	Total Production (Tons)	Total Shipments (Tons)	Orders Booked (Tons)	Monthly Capacity of Plants (Tons)	Per Cent of Total Capacity Operated
June	107	63,298	62,888	39,814	94,840	66.7
July	107	54,433	55,922	39,131	94,826	57.4
August	107	63,038	60,207	36,752	94,858	66.5
September	107	56,024	54,378	35,452	93,665	59.9
October	107	56,798	54,221	42,978	95,652	59.4
November	107	47,112	44,215	34,817	95,801	49.2
December	107	44,586	41,328	40,800	94,751	47.1
1924						
January	107	56,278	58,504	64,058	97,049	58.0
February	107	58,793	52,918	56,828	94,816	62.0

Gear Grinding Chucks

The Bolender chuck illustrated, designed for accurately holding gears for internal grinding and facilitating the grinding of the bore concentric with the teeth, is being marketed by the City Engineering Co., Dayton, Ohio. Simple and rapid operation are claimed, as well as adaptability to a wide range of work.

Two types are available, a No. 1 chuck being for extremely small gears to those having 21 teeth, 6 to 8 pitch, and a No. 2, which is illustrated, for holding



Two Gears Chucked at Same Time

gears having from 20 teeth, 6 to 8 pitch to 31 teeth, 6 to 8 pitch. Special jaws may be provided for either chuck, which permit the chucking of parts as large or larger than the outside diameter of the chuck. Jaws are available also for holding spiral bevel ring gears and special extension jaws for chucking steering gear worms on the outside diameter. An attachment for chucking cluster gears true with the pitch circle may be furnished also.

The chuck is said to be oil, water and dust proof. It may be equipped with either three or five jaws, each of which are provided with a hardened and ground steel pin when holding spur gears for grinding. It is claimed that spur gears are easily held concentric within 0.001 in., with practically no attention by the operator.

Truing of the chuck is effected by adjustments on the body carrying the jaw-operating sleeve, which is emphasized as a feature economizing time and assuring closer accuracy. The chuck permits the gear to be held vise-like or quickly released by means of relative movement between the sleeve and the body. Water-tight contact between the jaw shoe and the jaw is also a feature.

Woodward Records in March

The Woodward Iron Co. made three new high production records in March. The four Woodward furnaces in blast in that month produced 43,042 tons, which was 1375 more than their best previous output for a month. The by-product coke plant produced 71,432 tons of coke. The previous high point was 71,139 tons. The company's Redding mine produced 35,224 tons of iron ore, as against the best previous month's record of 32,881 tons.

New Production Records of Tennessee Coal, Iron & Railroad Co.

BIRMINGHAM, ALA., April 7.—An official statement by President George Gordon Crawford of the Tennessee Coal, Iron & Railroad Co. as to records of production broken during March was most interesting, especially as to the total of red ore mined, 334,677 tons, and as to steel at the Ensley open-hearth, 110,268 tons, as compared to 107,395 tons in March, 1923. Greater production is being sought constantly.

The statement as to production during March is as follows:

Red Ore: Muscoda No. 2 mine, 30,864 tons; 30,779 tons best previous production, August, 1923. Muscoda No. 4 mine, 47,456 tons; best previous, 45,456 tons, January, 1924. Total Muscoda ore, 144,379 tons; best previous, 137,721 tons, January, 1924.

Wenonah No. 10 mine, 29,672 tons; best previous, 27,414 tons, October, 1923.

Ishkooda No. 13 mine, 28,679 tons; best previous, 27,813 tons, March, 1917.

Total Red Mountain group, 329,247 tons; best previous, 322,415 tons, January, 1924.

Grand total ore, 334,677 tons; best previous, 326,107 tons, January, 1924.

Coal: Hamilton Slope, 37,718 tons; best previous, 27,161 tons, February, 1924. Blocton No. 10 mine, 18,648 tons; best previous, 16,270 tons, January, 1924.

Bessemer No. 4 furnace (pig iron), 9402 tons; best previous, 9348 tons, January, 1924.

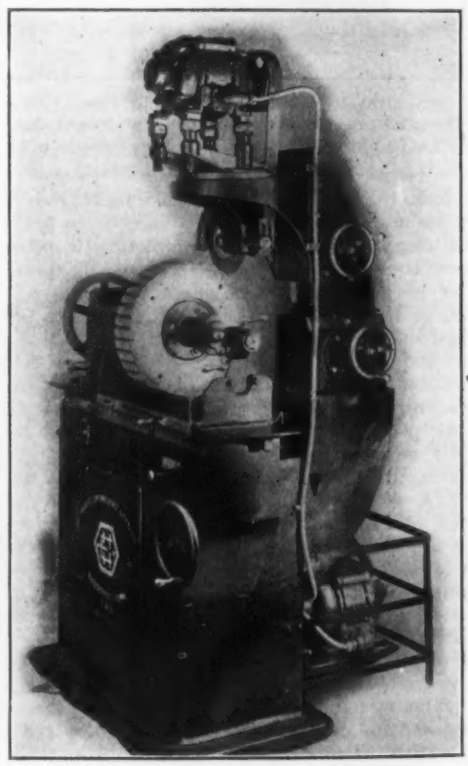
Ensley open-hearth (steel), 110,269 tons; best previous, 107,395 tons, March, 1923.

Machine for Grinding 16-In. Hobs

An automatic hob grinding machine recently built for the Youngstown Sheet & Tube Co., Youngstown, Ohio, and which is rated to grind hobs 16 in. in diameter and having 48 flutes, is shown in the accompanying illustration. The hob is of high-speed steel and weighs approximately 280 lb.

The hob-carrying spindle is provided with three sets of heavy-duty Hess-Bright annular ball bearings, and the tail stock, which is equipped with a taper support, is also carried on heavy-duty ball bearings. The ball bearings provided for the indexing mechanism are said to permit the indexing of the large hobs almost instantaneously. Arrangement is made for adjusting the hob to the grinding wheel by rotary motion so that the proper angular plane of the tooth faces may be preserved. A diamond truing device in the wheel head permits of convenient dressing of the wheel.

The wheel head is driven by belt from a separate motor as shown, and means for adjustment of the motor brackets have been provided so that a slack of 6 in. may be taken up in the belt. The motor drive for the in-



Grinding 16-In. High-Speed Steel Hub

dexing and table reverse mechanism is mounted on the back of the machine and the drive is through a built-in reduction gear. Special provision has been made so that the work table carrying the hob may be moved far enough to one side in order that the hobs may be lifted from or put into the machine by an overhead hoist without interfering with the motor swivel head, diamond truing device or other overhead parts of the machine.

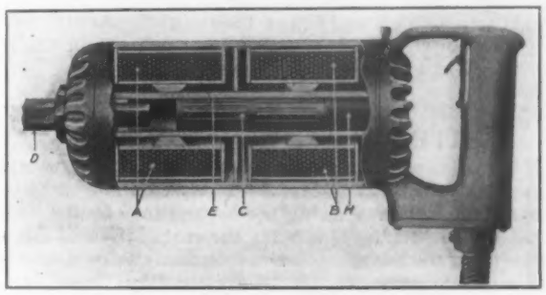
The machine was built by the Harris Engineering Co., Bridgeport, and is designated as its No. 160. The range is for hobs from 6 to 16 in. in diameter.

Electric Hammer for Variety of Uses

An electric hammer known as the Syntron, offered in three sizes and adaptable to a variety of work, is being marketed by the National Electric Mfg. Co., Pittsburgh. The machine has only one moving part and is arranged to operate from an electric light socket. Low operating cost is a feature claimed.

General uses for the machine include drilling through masonry walls, driving rivets, light assembly work and calking of pipe, tanks and plates. By connecting the piston of the hammer to the work and eliminating the percussion feature, the machine may be used in the operation of screens and vibrating machines. The three sizes are designated as type A, B and F, respectively. Type A is a 17 lb. hammer having a capacity for drilling holes up to and including 1 in., and type B, a 26 lb. unit is for drilling holes up to 1½ in. The type F, a 9-lb. hammer with a capacity for holes up to and including ½ in., is a recent addition to the line.

The accompanying cross-section view shows the construction of the hammer. Windings *A* and *B* are mounted on cylinder *E*, forming powerful field magnets which are energized by alternating current. When electric current passes through the windings, the hardened steel piston *C*, moving in the cylinder, is given a reciprocatory motion in synchronism with the supply voltage. The end of the cutting tool *D* is held by the collar shown and receives the full force of the blow as the piston reaches its maximum speed. On the other end,



Arrangement of Parts of Electric Hammer

the piston impacts against a shock absorbing device, *H*, which is said to absorb the kinetic energy of the up stroke and expend that energy in adding force to the down stroke. The starting and stopping of the hammer is controlled through the trigger in the handle.

The alternating current supplied to the hammer is regulated through a small portable control box, which with the hammer, cable tools and carrying cases make up the complete outfit. For use on direct current, rotary converters are available.

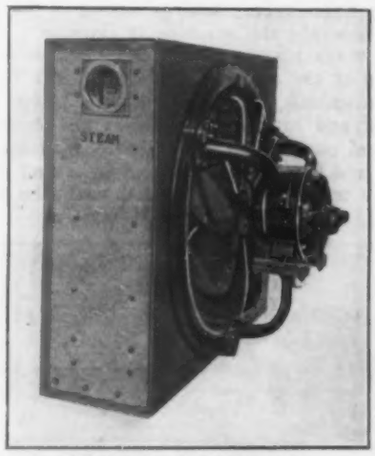
Compact Unit Heater for Industrial Buildings

Compactness is a feature of the Venturafin unit heater illustrated, which has been placed on the market recently by the American Blower Co., Detroit. The heater is intended for use in industrial buildings and warehouses and the compactness provided by the patented arrangement of the heating surface, together with the light weight, are claimed to make the unit applicable where the usual heating unit might be cumbersome.

The steam coils are made up of straight, seamless copper and brass tubing, about which is helically wound a copper ribbon that forms a fin. The fin is bent in such a way that a large part of its surface is in contact with the outer surface of the tube, and this union is later treated so that the fin and tube become practically integral. This construction is intended to facilitate the transmission of heat from the tube to the fin and thus to the air passing through the fins, it being claimed that it provides more than four times the heat-transmitting surface than the tube alone.

The tubes are arranged in rows three deep, and staggered. The ends of the tubes are pressed into a thin flexible copper plate, the holes in which are smaller than the tubes, giving a tight flanged connection. The flanges are given a solder bath. The flexibility of the plate is said to take care of expansion and contraction. Semi-cylindrical die-pressed headers are placed over the ends of the tubes, and locked by means of a folded seam.

The heaters are designed to withstand pressure of 50 lb. of steam or liquid and any vacuum. Two or more units may be combined in a single housing. Each unit in-



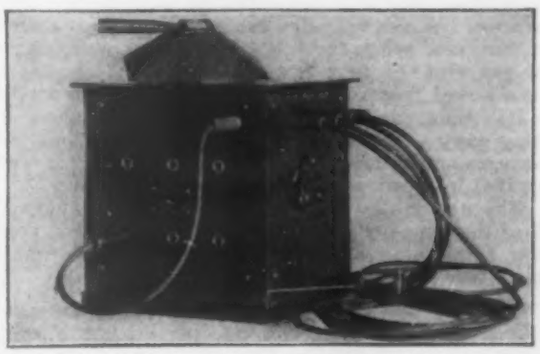
Venturafin Unit Heater

cludes a heater and standard Ventura motor-driven fan which forces the air over the heating surface. The capacity is approximately 3000 cu. ft. of air per min. heated from 60 to 115 deg. Fahr. with steam at 5 lb. pressure, corresponding to 150,000 B.t.u. per hr. The height of the unit is 2 ft. 5 in., the width 2 ft. 8 in., and the depth of heater 10 in. The weight is 340 lb. crated.

Portable Arc Welder

A portable arc welder of the continuous arc type, designated as Metweld, and intended for production and maintenance work, has been brought out by the Welding Metals Mfg. Co., Cleveland. It is available in 110 and 220 volt sizes, and has a range of from 50 to 150 amp. in six steps of approximately 20 amp.

The current consumption for the 110 volt machine ranges from 2.7 to 8 kw. The heat can be changed



Welder for Production and Maintenance Use

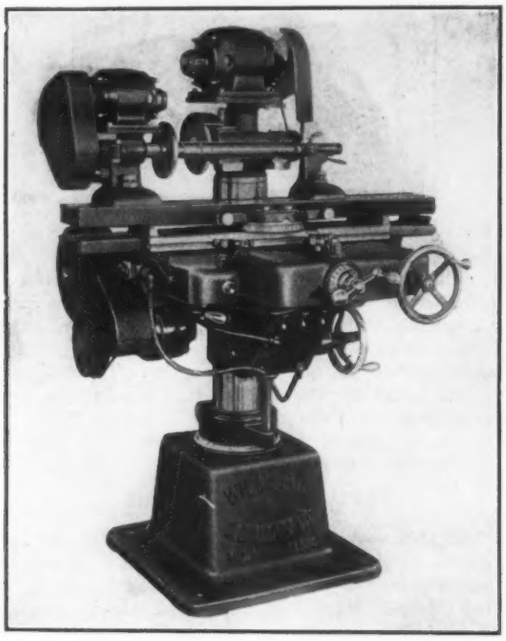
quickly for different thicknesses of work by plugging any one of the six steps with one end of the jumper. A carbon electrode can be used if desired. The welding, ground and jumper cables are heavily insulated and the welding and jumper cables are extremely flexible. The cable terminals are of bronze and protected by vulcanized fiber. The electrode holder is cast brass with a vulcanized fiber handle, the face shield being also of vulcanized fiber. The frame for holding the lens is made of two aluminum pieces and the under portion can be easily removed by unscrewing two knurled nuts, for renewing the lens.

The welder is inclosed in a substantial case and may be trucked without injury. The weight is 165 lb. for the 110 volt and 190 lb. for the 220 volt welder.

Cutter Grinder with Direct Motor Drive

The No. 1 universal cutter and tool grinder of the Wilmarth & Norman Co., Grand Rapids, Mich, is now arranged with the drive from direct-connected motors on the machine. This arrangement is intended to eliminate the superstructure and overhead countershaft heretofore required, and is considered new practice with machines of this type. A large saving in the power required to operate the machine is claimed.

The new machine is driven by a ½-hp. motor located at the top of the column, as shown in the illustration, and the headstock is equipped with a ⅛-hp. motor for cylindrical and internal grinding. For operating the longitudinal power feed of the table, a ¼-hp. motor is provided, and is attached to the gear box on the saddle. The latter motor is not required with the hand feed



Direct Connected Motors Eliminate the Superstructure and Overhead Countershaft. A large saving in power is claimed

machine. The controlling switches are located accessibly on the knee, below the table. Less wear and tear on the gears in the gear box, which is only in operation when power feed is actually in use, and the reduction to less than one-half of the floor space required, by doing away with the superstructure, are additional advantages emphasized. Also the time and expense were involved in erecting the previous superstructure.

The new motor drive arrangement is adaptable to all of the company's No. 1 machines now in use. Complete with motors and attachments the machine weighs about 1600 lb.

British Empire Defers Dividends

At a meeting of directors of the British Empire Steel Corporation, held in Montreal, it was decided to defer dividends upon all the shares of the corporation and its subsidiaries. This action will affect stock to the total par value of $19,785,800. This total is made up as follows: British Empire Steel Corporation, first preferred, $7,640,200; Dominion Steel Corp., preferred, $4,727,000; Dominion Iron & Steel Co., Ltd., preferred, $3,665,200; Dominion Coal Co., Ltd., $2,803,500; Nova Scotia Steel & Coal Co., Ltd., $821,000; Eastern Car Co., Ltd., $126,800. The reason for this action was given as the shutdown of the steel plant and coal mines during the first two months of the year while negotiations were being continued for a new wage agreement with the coal miners.

Simplification of Sizes of Metal Lath

WASHINGTON, April 8.—The Government printer is about to issue an official publication covering the simplification of sizes and types of metal laths. The publication proposed will be the result of surveys made in 1922 of sizes and types of this product by the Associated Metal Lath Manufacturers, together with a conference with the division of simplified practice, Department of Commerce, at which manufacturers, architects, builders and builders' supply representatives and labor union officials were present.

More than 80 per cent of all groups concerned, according to the Department of Commerce, have adopted the simplification recommended, reducing from 125 varieties to 24 of flat expanded, ⅜-in. expanded and flat rib expanded metal lath, and have been putting the reductions into force for some time.

Refractories for Melting Platinum

A sample of fused zirconium oxide was obtained by the Bureau of Standards from a company developing the production of fused zirconia commercially. Small crucibles of this fused zirconia have been made in the laboratory without an added oxide bonding material and with additions of 20 per cent thoria or 15 per cent aluminum. Very promising results have been obtained, since several of the crucibles have satisfactorily withstood very sudden and uneven heating in the oxy-acetylene flame and even quenching in water from temperatures as high as 1700 or 1800 deg. C. Actual melting tests with platinum will be carried out in the induction furnace as soon as possible.

Appropriation for Diesel Engines

WASHINGTON, April 8.—The House of Representatives on Wednesday of last week passed and sent to the Senate the bill authorizing the expenditure by the Shipping Board of $25,000,000 for the installation of Diesel engines in the board's vessels, the money to be available from the board's $66,000,000 construction loan fund. The measure also would authorize loans to private shipbuilders for the installation of Diesel engines up to an amount equal to 50 per cent of the cost of the work, and an additional loan up to two-thirds of the cost would be provided if ample security were given. Loans on vessels in the coastwise trade would call for a higher rate of interest. The bill was in charge of Representative Edmonds of Pennsylvania.

Ashland Furnace Makes Record

During the month of March No. 1 Ashland furnace of the American Rolling Mill Co. made a new record, 10,713 tons of basic pig iron being produced, or an average of 346 tons per day. During the same month, the Freeburne mine of the same company made a new record, 62,940 tons of coal being produced and shipped to the plant of the Portsmouth By-Product Coke Co. The American Rolling Mill Co. is now operating three of its blast furnaces, the East furnace at Columbus having been blown in on March 25. It has two Columbus and one Ashland stack blowing. The sheet mills of the company are running full time, and operations have been commenced at the new unit at Ashland works, but full production has not yet been secured.

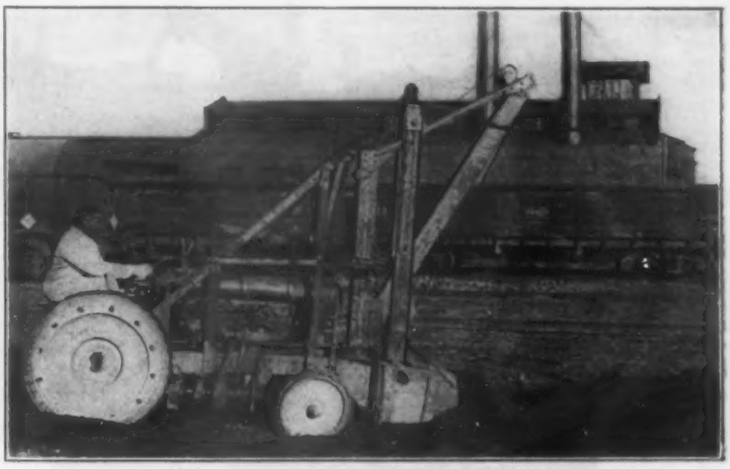
Treasury Decision as to Rivets

WASHINGTON, April 8.—Assistant Secretary of the Treasury Moss has instructed collectors of customs that imported bifurcated rivets are classified as lathed or machined, within the meaning of paragraph 332 of the Fordney-McCumber tariff act, and are dutiable at the rate of 30 per cent. The ruling, made on March 31, becomes effective 30 days from that date since it changes previous decisions of the department under which bifurcated rivets were assessed, with duty at the rate of 1c. per lb. under the same paragraph as rivets of iron and steel not specially provided for.

Handling Foundry Sand with a Fordson Tractor

Converting a Fordson tractor into a type of loader has recently been accomplished by the Glasgow Engineering Co., St. Louis. The designer of the apparatus, which is known as the "Glasgow Dig-A-Load," after an experience of about 20 years in the foundry business, became convinced that there are a number of cases where hand-shoveling can be eliminated by the use of such a machine. It has therefore been designed for use in foundries and steel plants and has been mounted on a Fordson tractor. The company emphasizes as one field of usefulness its application "to handling sand from the stock pile to the sand molds in steel foundries, to cutting over and dumping sand in the filling of large molds and to serving core benches in both iron and steel foundries." Other applications suggested are the filling of coal hoppers on mechanical stokers, on boilers and heating furnaces, particularly where the installation does not justify the cost of a conveyor system.

The machine consists of a dipper mounted on a pair of dipper sticks which are carried on a heavy structural steel framework, the latter being mounted on the Fordson tractor. The action is similar to that of a baby steam shovel except that it is preferable to back the tractor about 4 ft. from the pile of material to be handled and then run it forward into the pile before hoisting the dipper. The dipper is raised by a cable which runs back to the main hoisting drum and is made to dig into the ground or crowd into a pile by the action of the hoisting cable, which is looped over a sheave on the upper end of the dipper sticks. The side-swinging motion is controlled through two cables which run from each side of the pull-wheel back to two small drums on the most powered shaft. The whole machine is heavily built to withstand severe usage.



New Sand and Coal Handling Apparatus Having a Fordson Tractor for the Motive Power

New Foundry for Automobile Pistons at Warren, Ohio

Features of unusual interest will be provided in the new foundry of the Warren Foundry Co., Warren, Ohio, which will be placed in operation about June 1. This will be a highly specialized foundry that will be devoted largely to the manufacture of automobile pistons.

No jobbing or automobile cylinder work will be taken but some plain production work will be done. An extensive system of conveyors is being installed so that a casting will not touch the floor from the time it is shaken from the mold until it is finished and leaves the plant.

Iron of only one analysis will be used, whether pistons or other castings are being made. All molds will be made in green sand. The product will be limited practically to castings not requiring cores so that, if a core making department is provided, the equipment will be limited to one small core oven. There will be two Whiting cupolas of the continuous pouring type, each having a capacity of 9 tons per hr. Each cupola will be operated on alternate days.

There will be 18 sets of molding machines arranged in two rows for making pistons. One row will consist of 18 Osborn machines for making the drag mold and the other 18 machines will be of a special type for making the cope. Two mold conveyors will be installed, one alongside each row of molding machines. On the other side of each mold conveyor will be 18 air squeezer type of machines for other than piston work.

The foundry will have a capacity of 80 tons of pig iron and from 45 to 50 tons of finished castings per day. Its piston capacity will be 20,000 per day. Complete mechanical sand handling equipment will be provided and the sand will be delivered to each molding machine. The entire conveyor equipment, including that for sand handling, will be supplied by the C. O. Bartlett & Snow Co., Cleveland.

The foundry will occupy the plant of the Warren Metallic Bed Co., which was recently purchased by the Warren Foundry Co. and is now being converted for foundry use. F. B. Whitlock, formerly president of the Interstate Foundry Co., Cleveland, is president and treasurer. E. W. Beach, formerly president of the Ferro Machine & Foundry Co., Cleveland, is vice-president and general manager and E. T. Ward, formerly associated with the General Foundry Co., Warren, is secretary.

Improvement in Iron and Steel Industries in Pennsylvania

HARRISBURG, PA., April 7.—Slight improvement in the iron and steel industry in the more important districts of Pennsylvania is noted in the semi-monthly labor report to Dr. Royal Meeker, Secretary of Labor and Industry. Philadelphia and Pittsburgh seem most optimistic.

The Philadelphia district reports that the Ingersoll-Rand Co. at Easton is recruiting operators for various machines, tool makers and tool grinders. The Westinghouse Electric Co., Chester, is employing tool makers and tool grinders.

Pittsburgh reports a slight increase in the demand for workers, although the increase has not kept pace with the demand for common laborers. Present conditions seem to justify the hope that the demands will be more nearly balanced before long. Reading reports that virtually all iron mills and foundries are working full time. The steel business has improved somewhat, and conditions seem to be the most favorable that have existed for six months. Experienced machinists can be placed readily. Johnstown finds plants are operating on a normal basis.

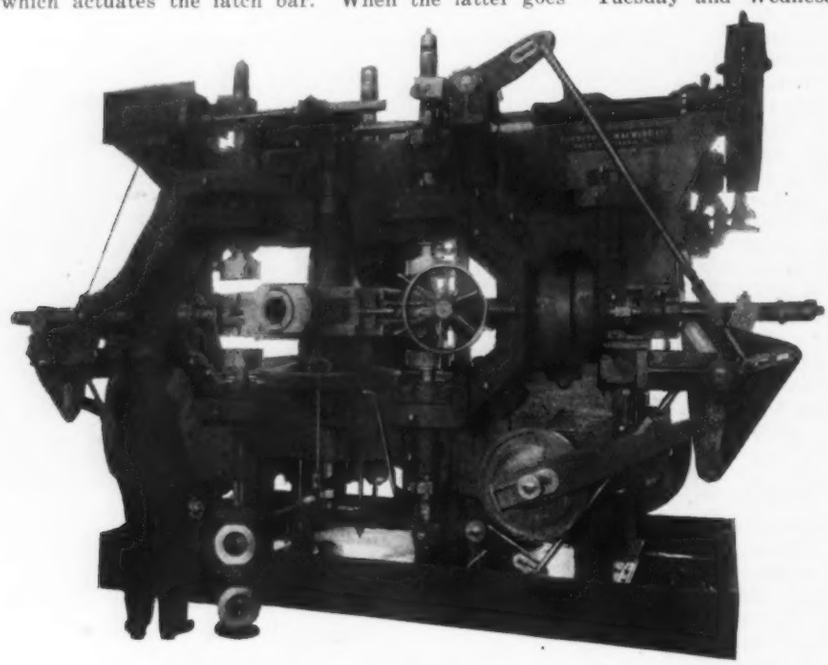
Williamsport reports that its largest foundry and machine shop has added many men, none of whom it had difficulty in obtaining. It expects to be able, however, to take care of the surplus of workers still existing.

Erie reports a large surplus of workers, with probably fewer men employed on April 1 than had been employed on March 1. Harrisburg, reporting conditions somewhat slowed down, expects the condition to be only temporary. Conservative buying for the future is reported to be more pronounced, which is interpreted as being an indication of prosperous times. Mills and factories are requesting workers to fill vacancies, but no additions are being made to forces. No improvement is noted in the Scranton district, where employers are reporting laying off men rather than adding them. There is a decided surplus of skilled mechanics.

Multiple Automatic Machine for Reaming and Tapping Valves and Other Fittings

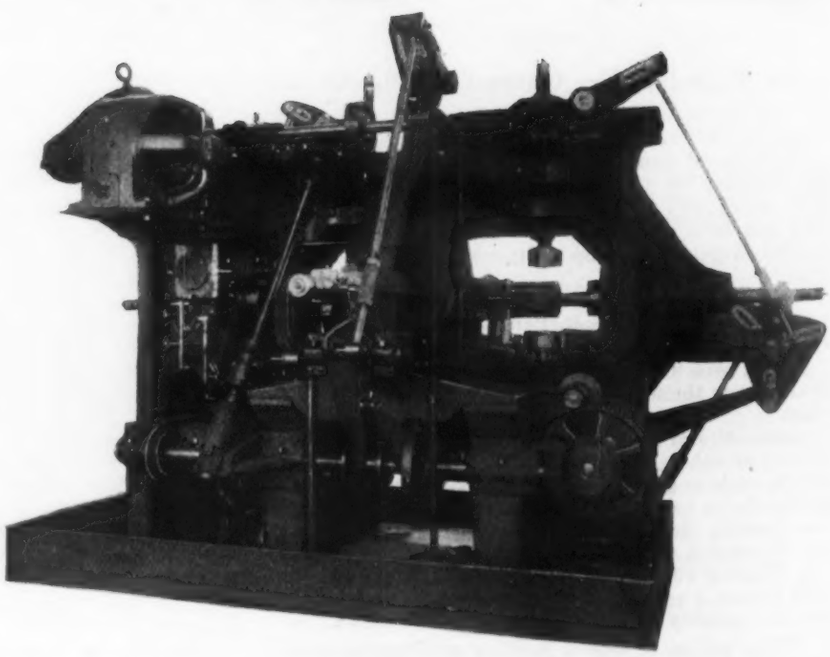
The special automatic machine illustrated, intended for the reaming and tapping of globe valves, cocks, and similar fittings, has been brought out by the Pottstown Machine Co., Pottstown, Pa. Although designed to take 6-in. standard globe valves as the maximum size of work, the machine covers a range of approximately 2 to 6 in.

The work is held in chucks, that in three loaded chucks being worked upon by the machine, while the operator loads the one facing him. The chuck turret is indexed by means of the air valve shown at the left, which actuates the latch bar. When the latter goes into place, the cam motion is started automatically, indexing the turret one station and then coming to a standstill, permitting the chucking operation to be repeated.



In This Globe Valve Finishing Machine, the Operator Loads One Chuck While the Machine Works on Three Loaded Chucks. Indexing of the turret is by means of an air valve. There are eight spindles which provides for roughing reamer and facing tools in several combinations. The three spindles on the right-hand side are interchangeable and may be used for tapping or reaming and facing. Automatic reverse for the taps is provided. A 6-in. globe valve may be finished complete in 4 min.

The machine has a total of eight spindles, providing roughing reamer and facing tools in any combination desired. Two spindles on the rear of the machine are employed for finish seating of either globe or angle valves. The three spindles on the right-hand side of the machine are interchangeable, and may be used for tapping, reaming or facing. By the shift of one gear the automatic tap reversing mechanism is thrown in. Different lengths of travel of the spindle are provided for by elongated slots in the wrist plates. Each spindle may be adjusted while the machine is in operation.



It is claimed that a 6-in. globe valve may be finished complete in 4 min., which includes the cutting of the seat or threading the valve to receive the seat ring. Provision is made for setting up different pieces of work conveniently, the tools being arranged so that any one of the tools may be taken out without disturbing the others.

A 35-hp. adjustable speed motor is employed to drive the machine. A rotary pump and lubricating system is included in the equipment. A platform on which the operator may stand is built for the machine, which, however, may be mounted in a depression in the floor, if preferred.

The floor space occupied by the machine is 10 ft. 3 in. x 17 ft. The height is 11 ft. 6 in. and the weight 46,000 lb.

Triple Supply Convention in Cleveland

The triple supply convention, to be held jointly by the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association, is scheduled for Monday, Tuesday and Wednesday, May 19, 20 and 21. The Hotel Cleveland will be headquarters for the convention.

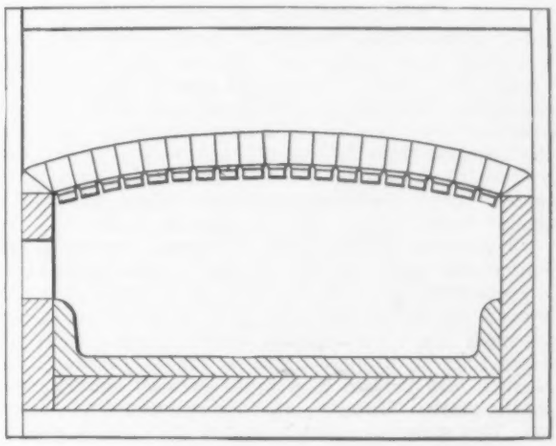
Manufacturers and merchants of Cleveland are preparing an entertainment program. Discussions at the meetings will be devoted almost wholly to sales and distribution of mill supplies.

Among the speakers already engaged are Col. L. P. Ayres, vice-president Cleveland Trust Co., and A. E. Foote, United States Department of Commerce. The latter's subject will be "The Value and Progress of Simplification."

LONGER LIFE FOR FURNACE ROOFS

Separation of Mechanical Pressure from Heat Expansion and Insulation of the Arch Proper —Special Brick Required

As the ordinary open-hearth roof, made of silica brick in the usual method of arch construction, is good for only 200 to 300 heats on the average, investigators have endeavored to provide conditions which would lengthen this life and thereby reduce the cost of making steel. In the usual method of construction, the lower line of the arch is the line of maximum pressure, due to the weight of the brick and the various components of its reactions against the skewbacks. This line also is the line of maximum expansion caused by the action of the heat in the furnace, and it is also the



line attacked by the gases emanating from the bath or fuel.

In a new form of roof patented by Charles J. Crawford and handled by the Refractories Process Co., New York, there is separation between the line of the arch sustaining the maximum pressure and the line subject to both the maximum expansion from heat and the deleterious action of the gases. As shown in the diagram, there is a 4-in. projection below the structure line of the arch, in which projection the brick is ¼ in. smaller than at the arch line. Successive bricks in this 4-in. area do not touch each other, but are separated by a narrow passage which, as the bricks are staggered in laying up the roof, forms a labyrinthine passage. In an interview Mr. Crawford furnished the substance of what follows:

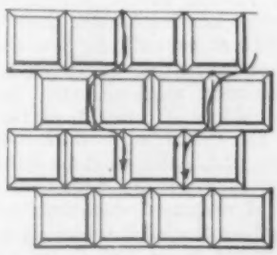
It is well known that silica brick under heat will expand. As heat continues to be applied they continue expanding until destroyed. This expansion is due to a series of inversions in crystal structure which take place under the influence of both the original burning of the brick and of long continued heating in use.

Bond in a silica brick is due to the interlocking of these expanding crystals. The initial bond of milk of lime serves merely to hold the brick together while green, but disintegrates under extreme heat. As the silica brick pass through the several changes in crystalline construction, and reach their limit of expansion in the form of tridymite, the interlocking strength of the crystal forms gradually disappears.

Because of this expanding and changing crystal structure under the influence of heat, each brick is put under internal strains which would cause it to rupture from brittleness if subjected to sudden temperature changes. By transferring from the working line of the arch to a projecting member the surface subject to the culmination of these changes, the strength of the arch is protected against their effect and an insulation is provided which will protect the arch until the 4-in. projection becomes worn away by the action of heat and fumes.

It is obvious that, as soon as the projecting portion of the brick has been worn away in this manner, we revert to the condition of the arch we have known for years. So long as this protective quality lasts, brick made under this principle should form a more durable roof than those today in use. The tridymite gradually developed in the heated ends of the brick will slowly disintegrate them and, little by little, they will spall off, but in so doing they do not thereby weaken the arch. The rate of crystal inversion to tridymite is normally slow in the absence of any fluxing or catalytic action in the process. But many destructive compounds, fluxes and catalyzers are formed in the basic open-hearth process by means of the lime, fluorine, ferric oxide, phosphorus, sulphur and carbon monoxide present.

In the so-called "checker roof" described, the reduced end, being relieved of structural strains, can expand freely. As the staggered design used creates a thermal dam, keeping the highest temperature away



At Left Is a Furnace Section With Roof Made of the New Brick. Above is a diagram of the staggered laying of the brick, with arrows showing path gases would have to take to pass through the forest of projecting lugs

from the line of the arch, this acts as a definite protection to that line. At the same time the fact of having the four free faces of each brick separated from its neighbors by a slight distance increases markedly the heating or radiating surface of the roof, as compared with present practice. This is analogous to the ribs on the cylinder of an airplane or other high-powered internal combustion engine, placed there for the purpose of radiating rapidly the heat from within the cylinder and, thereby, protecting the cylinder walls proper from deterioration due to excessive heat.

Exports of Iron and Steel

Steel rails formed the largest item of American exports of iron and steel products for the first two months of 1924, according to figures of the Department of Commerce. There were 60,613 gross tons of rails shipped, with black steel sheets a close second at 58,027 tons. Other items in order of tonnage included the following:

	Tons
Tin plate, terne plate, etc	47,297
Boiler tubes and welded pipes	45,119
Scrap	18,980
Galvanized sheets	18,604
Steel bars	18,205
Iron and steel plates	16,490
Fabricated structural materials	14,129
Plain wire	13,162
Ingots, blooms, billets, sheet bars and skelp	12,626
Unfabricated structural shapes	12,550
Barbed wire and woven wire fencing	11,589
Wire nails	10,978

Other items in the 415,038-ton total were individually below 10,000 tons each. Pig iron, not including ferroalloys, accounted for 8585 tons. The ferroalloys amounted to 1393 tons. Iron ore exports reached 2512 tons.

Among the more important awards for reinforcing concrete steel received recently by the Truscon Steel Co., Youngstown, is one involving between 700 and 800 tons, from Portland, Ore., and another of 850 tons for an apartment building in Michigan. The company reports the receipt of numerous orders involving small tonnages.

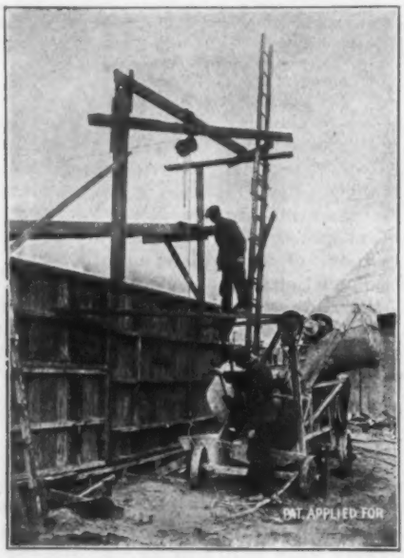
Cutting Costs in Building Workers' Homes

Low-Cost Dwelling Produced by Cutting Out Hand Labor and Utilizing Machines—Concrete Used for Lower Walls and Floor—Results Already Obtained

BY CAPT. G. L. CARDEN

INEXPENSIVE, yet comfortable and commodious, houses for those of modest means having largely disappeared in the post-war period of inflated costs, Kate Gleason, who was closely identified with her father and brothers in the development of the Gleason Works, Rochester, N. Y., has turned her engineering talents to the building of modern houses possessing the maximum of comfort at exceedingly low cost. The result, as accomplished by cutting out hand labor to a large degree and utilizing machine labor to assemble finished parts, should be of interest, particular in housing developments for industrial communities.

Foundations and walls must be built in place, and poured cement is generally acknowledged to be the cheapest way of making foundations and cellar walls, because it involves the least labor. It has not won its way for the upper walls and floors in small houses,



Concrete Handling Rig Invented by Miss Gleason, Using a Triplex Hand Hoist and Galvanized Steel Bucket in Conjunction with Portable Concrete Mixer

though it is commonly used in large buildings. It is Miss Gleason's theory that house building is not a competitive business, like putting up hotels and other large buildings, and that, since houses as a rule are built by men who have only local experience, there is no gain for them to combat the customer's natural prejudice against anything new. While contractors know it is perfectly easy to nail furring strips to cement walls while they are fresh, they are willing to have the general public think that the inner side of the concrete wall must be the finished house wall, without a chance for the air space so necessary to keep out dampness in any kind of construction.

If contractors were able to put up concrete side walls at the same expense as cellar walls, there would be an object, it is pointed out, in recommending this construction; but in general the rigs used for lifting the concrete high enough to pour into the top of the wall are expensive to move and require extra machinery for operation. The usual lifter is the home-made tower, which has to be taken down and rebuilt every time it is moved. It requires about 4 hp. to lift 4 cu. ft. of concrete. This calls for a rig, with mixer, heavy enough to carry a power-hoist. The moving of this heavy, clumsy contrivance over the humps and hollows of the usual building job costs money.

Right here is where Miss Gleason makes the first big slash into the expense item. This is accomplished by a rig of simple character consisting of an extension ladder braced to the forms and used in connection with a triplex hand hoist and a heavy galvanized steel bucket, as shown. For larger jobs a power hoist is employed. This rig requires a crew of three men, one man to shovel, one at the mixer and one to attend to the dumping into the chute. In practice it is found possible to charge the bucket with 4 cu. ft., lift it 14 ft. to the chute, discharge and lower ready for another charge, in the time it takes to mix one batch.

For the second story wall, or higher, it is found that concrete is more expensive than frame construction. It costs twice as much to get the forms up in the air as it costs for the ground floor; and the lower walls must be much heavier to support concrete upper walls and floors than to support a frame superstructure. Here recourse can be had to a fireproof wall material now on the market that is a mixture of cement and asbestos. This material comes in sheets of 4 x 8 ft. and can be worked like lumber. It is ¼ in. thick, easy to handle and will take stucco finish, if such finish is wanted. Experience shows that it is sufficiently strong for partitions and inside and outside upper walls.

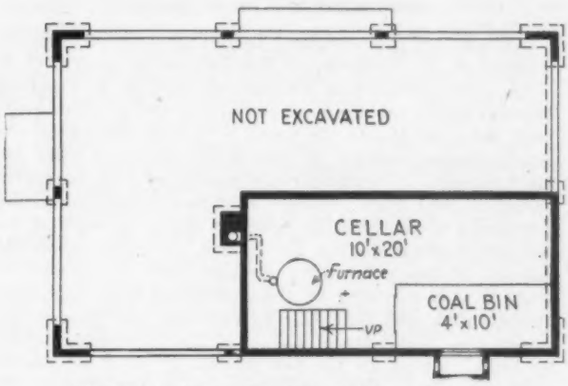
The first lot of concrete houses built on this basis were 20 x 20 ft., with 1200 sq. ft. of floor space in three stories. Each house took 83 cu. yd. of concrete in the outer walls, three floors and two stairways. The roof was of wood construction with fireproof covering. A second lot of houses was built, 20 x 30 ft., giving 1200 sq. ft. in two stories without a basement. The houses of this lot required 62 cu. yd. of concrete in the walls and foundations, floors and one stairway. It was possible in this second lot to employ lighter walls and foundations than in the taller house.

From the experience already gained, Miss Gleason has evolved a house which under existing building regulations should be built in the neighborhoods of New York or Cincinnati for $3,600, with present labor and material prices. This cost will permit a reasonable profit to the contractor. Quantity production was the first idea—a gang for each major operation—but in practice it was discovered that building laborers belong very much to the floating class. Considering that building material is difficult to guard, once it is out of the warehouse, it is found advisable to employ gangs of three to five men for all-around work, making each gang responsible for one house at a time and keeping in view enough walls and roofs ahead at the end of the season to give the good men work all winter.

In the last-planned house, as shown by the accompanying drawings, the construction calls for one story of concrete. The principal dimensions are 20 ft. 9 in. x 32 ft. 9 in., and 1560 sq. ft. of floor area, including the 10 x 20 ft. cellar. The total amount of concrete for foundations, walls and two floors is 30 cu. yd. The stairways, upper floor and the roof are of wood. In this case the roof forms the upper outer walls. The roof proper is covered with fireproof material, while the gable ends and the dormers are covered, both sides, with cement and asbestos sheets of the material above referred to.

There is nothing fireproof about a wooden staircase leading to a wooden ceiling, but the ground floor is con-

crete and the furnace insulated. In any event, there is accorded fully as low an insurance rate as on the completely concrete houses first designed. The beamed ceiling of this design makes a striking picture. It is made of wood now costing 3½c. per board foot. To get a fine finish recourse is had to painting with white lead worked into a thick soup by mixing in as much building sand as it will take. To keep sound and dust from sifting down from the upper floor, heavy, black roofing felt is used; when cleaned with gasoline this makes a good looking floor covering. In the first or concrete floor experience shows that the best results are obtained, and



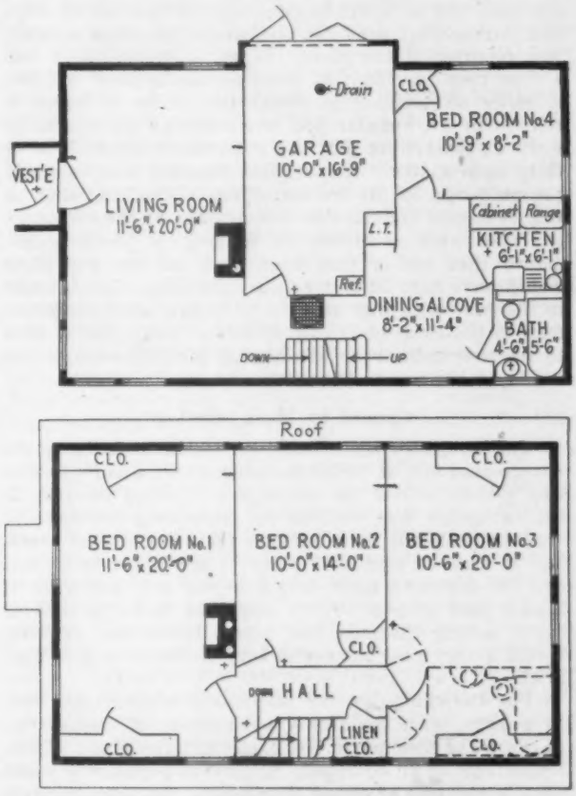
Placing a Garage in the Center and Then Building a House Around It Is the Novel Plan Adopted. Laundry tray is in the garage and the refrigerator is iced from there; in fact, the rear or kitchen entrance is through the garage. Bedroom No. 4 might be made a library or "den." Dotted lines at lower right on second floor plan locate a second bathroom, reducing the length of bedroom No. 3 to 14 ft. 6 in. This might readily be made the only bathroom, eliminating the one below it and utilizing that space for enlarging the dining room. Excavation is limited to furnace and fuel needs and involves less than one-third of the house area. There is room for vegetable storage alongside coal bin

for the least money, by using a good quality of linoleum or other manufactured floor covering.

In this dwelling a garage is placed in the middle of the house, where it gets some reflected heat. As Miss Gleason expresses it: "My wish has been to please the house-mother with a family income of $1,500 to $4,000 a year, out of which she wishes to save something for her family, or for her husband's business, and so wants to do all her own work. It is the condition with which I was familiar when I was a little girl and my mother used to tell me her dreams of the house she would like to have."

As will be seen from the designs, the register of the pipeless furnace is central at the stair well for heating the whole house, and particularly handy to the bathroom door. The stairs from above land in front of the bathroom. On the bedroom floor a second bathroom may be placed right over the lower one, where it will be easy to extend the pipes. The kitchen is next to the bath, so as to take the same line of plumbing.

The hot-water boiler is put in the kitchen to serve as a drying rack and because the gas heater can exhaust directly through the outside wall. The range is next the window and an electric fan takes out the cooking odors. The refrigerator opens into the dining room



and the ice is put in from the garage. The laundry tray in the garage makes a short run for the plumbing and an easy trip to the drying yard.

The pre-cast mantel for the living room has a large recess for books. All electric outlets are side lights or base plugs. The vestibule entrance keeps out the dirt and cold and gives extra closet space. Two of the upstairs bedrooms have light from three sides. The closets are large, and it is not usual to have the luxury of an upstairs fireplace in a $3,600 house.

As Miss Gleason aptly sums it up: "We all want a house to be comfortable. Then we want it to be beautiful, and after that to have its cost low. Many, many architects know how to make houses comfortable and beautiful, but not so many know that the way to reduce the cost is to cut out hand labor."

Chamber of Commerce of the United States at Cleveland

WASHINGTON, April 7.—Outstanding manufacturing problems will be considered at the forthcoming annual meeting of the Chamber of Commerce of the United States at Cleveland, May 6 to 8. A special group meeting of leading manufacturers from all over the country will be held on the opening day of the convention, under the auspices of the chamber's department of manufacture, of which E. W. McCullough is manager.

This special group meeting will be devoted almost entirely to problems of particular interest to manufacturers. Discussion of the three major topics of the convention, "Business and Agriculture," "European Readjustments," and "The Responsibility and Integrity of Business" will take place in the general sessions.

The preliminary program for this group session, which has just been announced, includes the following subjects: "The Obligations of Employer and Workers in Successful Production," "The Simplification of the Government's Purchases," "Industrial Pensions, or the Care of Faithful Workers."

An interesting motor installation is to be made in the new plant of the Herbron Mfg. Co., Toledo, Ohio, by the Wagner Electric Corporation. The Herbron company will engage in the manufacture of drop forgings. Power will be supplied by 20 Wagner motors. Ten of these will be the squirrel cage type, and the other ten, of equal horsepower, will be Fynn-Weichsel motors, to compensate for the low power-factor of the squirrel cage motors and thus to give the entire installation unity power-factor over practically the entire load range.

INTENSE SAFETY CAMPAIGNS

Record Made at Zanesville—One Is Expected at Middletown, Ohio

What is said to be a world's record for safety campaigns was completed at the Zanesville Works of the American Rolling Mill Co. on the night of March 31. Realizing the importance of preventing accidents, the company put on a safety campaign to last for 31 days, and during that time not one single lost time accident was reported at the plant. When it is considered that a "lost time" accident at this company's plant is taken to mean an accident by which the victim is forced to relinquish his regular job, even though he is able to work at some other job, the remarkable record will be fully appreciated. Remarkable interest was taken in the campaign by the 900 employees of the company. It was even said that in the closing days of the campaign the men were so intent on making a "no-accident" month that had a man been hurt on the job there would have been little sympathy for him. The interest in the campaign was aroused to such a pitch that each man in the company's employ felt it his personal duty to see that neither he nor any of his fellow-employees would be the one to "break the record."

Opened by Mass Meeting

The campaign was opened by a mass meeting in the Armco stadium, at which the object of the safety drive was placed before the employees. Initial interest in the campaign was secured by requesting the men to send in a slogan or a cartoon featuring safety work, and it may be said that some of the ideas submitted and the drawings made would do credit to the work of highly paid artists. There appeared to be no lack of talent among the men, and once interest was aroused, it was a very easy matter to keep enthusiasm at a high pitch.

For the campaign the employees were divided into 14 groups, with the safety committees of each group in charge of that particular section of the plant. Daily inspections of all equipment and every part of the plant were made, and anything that looked the least bit dangerous was eliminated. Safety first badges, bearing appropriate slogans, were worn by all employees, and men were hardly allowed to go to work without displaying the emblem of his particular department. Interest among the men was kept up by some novel stunts, the chief one being daily accounts of a prize fight, a round each day, between well known safety committeemen and such persons as "Careless" Sap, "Terrible" Hazard, and other chance takers in the mills. At noon each day, balloons were sent up notifying the townspeople that no accidents had happened, and at 8 o'clock each evening a skyrocket was sent up to show that another day had passed without an accident. Interest in the campaign was statewide, and officials of the State of Ohio were keenly interested and lent every support to the movement. In the city of Zanesville, the promoters of the drive organized a safety week, and during that period there was not a single accident, as compared with an average of three serious accidents per day during the first two months of the year.

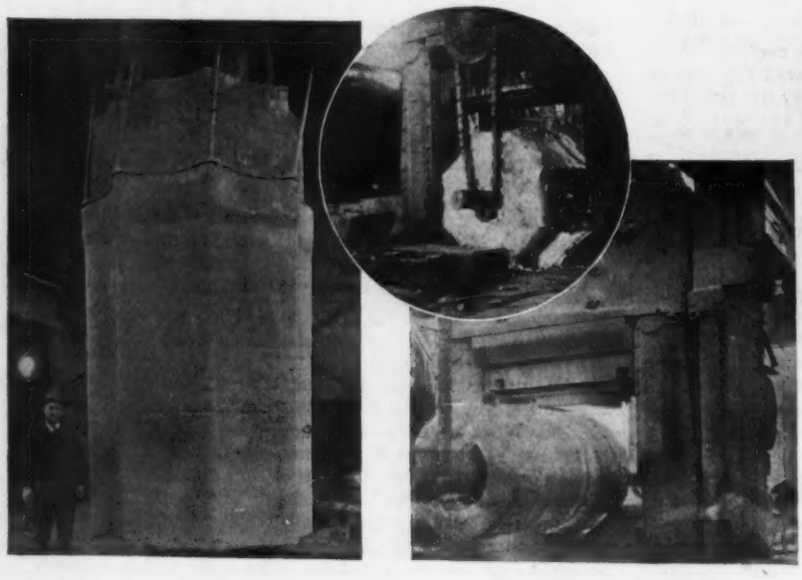
Supported by Committeemen

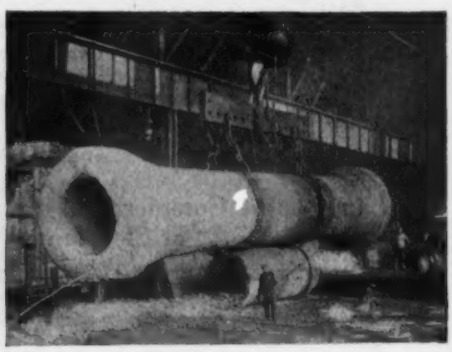
Officials of the company, including General Superintendent A. F. Murphy, of the Zanesville works, C. R. Hook, vice-president at Middletown, and M. E. Danford, general works manager, were back of the drive in every way, and on March 29 gave a turkey dinner to the safety committeemen of Zanesville, at which over 200 were present. Congratulatory messages from Governor Donahey and high officials of other steel companies were read at the meeting praising the good work of the Zanesville plant during the month. At the dinner the lessons of the drive were stressed, and the Zanesville plant is still carrying on the movement so auspiciously inaugurated, and bids fair to continue the good work.

At the Middletown works of the company, a "no-accident" campaign for the month of April is now in progress. Over 4000 employees are in the Middletown works, but officials of the company are confident that the "no-accident" record will not be broken. Enthusiasm in the various departments of the plant is running high, and a new record is confidently expected.

Recommends Dismissal of Complaint

WASHINGTON, April 8.—Passing upon the complaint of the Black Steel & Wire Co., manufacturer of wire rope at Kansas City, Mo., Examiner Leo J. Flynn, in a tentative report to the Interstate Commerce Commission, recommends dismissal of the case, having held that carload rates on wire rods in coils, from Acme and Peoria, Ill., Harriet, N. Y., and Johnstown, Pa., to Kansas City, are not unreasonable or otherwise unlawful. The rate from Peoria and Acme to Kansas City is $8.29 per gross ton, or 37c. per 100 lb., while the rate from Harriet is $6.90 and from Johnstown $14.03. Among the decreases asked was a rate of $4.62 from Acme and Peoria.





STEPS in the progress of forging the cross drum for a Babcock & Wilcox boiler capable of generating steam at a pressure of 1200 lb. per sq. in. were shown at a meeting of the Franklin Institute at Philadelphia, March 19, by John L. Cox, assistant to the president, Midvale Co., Philadelphia.

The cross drum is a forged steel

EXPORTS OF MACHINERY

Mission of the Consulting Engineer in Fostering American Business

BY W. H. RASTALL*

IT has long been observed that in foreign countries when a British subject purchases equipment for a factory he will, in all probability, select British made machinery; correspondingly, if the same enterprise were placed under German control, the equipment would probably be secured from German sources, while if an American were in charge quite probably he would greatly prefer American machinery. Furthermore, if any of these men were asked why he had selected equipment as he did each would undertake to prove the superiority of the equipment selected.

Sometimes bitterness develops from situations of this kind and disappointed manufacturers are disposed to criticise severely, but it should be remembered that these selections seldom represent a spirit of narrow nationalism, although there are exceptions. Abstractly, of course, one might assume that one type of machinery was best for the work and wish that all of these men had sufficient breadth of mind to accept this, regardless of the country of its origin. But usually one responsible for the selection of equipment for an important enterprise is strongly disposed to use those types he has previously tested and found suitable and has but scant time to study the advantages of strange types of machinery.

It should also be remembered that each of the countries named has its own distinctive engineering methods. If a given bridge is to be erected in Siam or a railroad is to be built and operated in China it will be found that French engineers would employ methods very different from those that would be used by American engineers, and obviously the machinery employed must be suited to the methods adopted.

Very commonly, if a foreigner in charge of an enterprise can be persuaded to use American methods for the solution of his problems it will be almost certain that he will use American machinery wherever machinery of any kind is required. Consequently it is clear that, entirely apart from the question of the merit of American engineering and machinery, it is greatly to the advantage of American machinery manufacturers to have enterprises in foreign countries under the control of Americans. Instances are on record where a single American engineer has been the means of developing machinery orders for the United States in excess of $200,000 per year. But it can also be shown that American engineers and American engineering enjoy an excellent reputation abroad and are distinguished for their achievements.

The way in which consulting engineers influence the placing of orders for machinery is shown in the following quotation from a report of Thomas M. Ainscough, British trade commissioner in India. When writing of American competition in the machinery trade there he states: "The influence of the American consulting engineers to the Tata industrial group has been enormous. Not only the steel works plant at Jamshedpur, but also the machinery required for the surrounding subsidiaries, such as tin plate mills, steel wire drawing plant and agricultural implement factory, is almost entirely of American origin, as also is a very large proportion of the hydro-electric plant on the Bombay side and the oil-crushing machinery at Ernakulam near Cochin."

Obviously, European interests find the work of such engineers affects this trade adversely, and in a recent magazine article Lord Ronaldsby, who was recently governor-general of one of the provinces of India, stated in connection with plans for developing British trade there: "The most effective course will be to see that the capital, the business acumen and the science which India requires and for long will continue to require from outside for the development of her resources are provided by Great Britain." This is a clear intimation of the support the Government of India will give British engineers there and is representative.

In Europe great efforts are made to place engineers in such positions in all foreign countries and American manufacturers of machinery should meet this.

Also one gathers the impression that the consulting engineers of the United States have not given sufficient attention to this subject, for although some of our engineers have given a great deal of attention to foreign business and have done a great deal of very creditable work abroad, many others have neglected these opportunities in spite of the fact that great sections of the world are ready to be industrialized and very commonly the opportunities for profit are greater in the various foreign countries.

We have now become a creditor nation and are prepared to export, say, a billion dollars a year, and it is to be anticipated that greater returns can be secured if these funds are invested in foreign industry rather than in Government issues, as has been so common heretofore. Also in this situation lies a very definite opportunity for the manufacturers of machinery. It will materially benefit a large group of our people if machinery manufacturers will cooperate in securing the appointment of Americans for foreign engineering work.

*Chief, industrial machinery division, bureau of foreign and domestic commerce, Washington.

cylinder 4 ft. inside diameter, 4¼ in. thick and 34 ft. overall length, the ends being closed in to a 12 x 16-in. manhole. The forged weight of the drum was 162,000 lb., requiring an ingot of 262,000 lb., allowing for scrap and losses. The block was cut hot from a 78-in. octagonal ingot and was upset from 156 in. in length to 98 in. in length by about 96 in. in diameter under a 9000-ton hydraulic forging press; it was trephined with a 23½-in. hollow punch; expanded to about 50 in. inside diameter; drawn on a mandrel in V dies to 45 in inside diameter and 58½ in. outside diameter; was annealed above its critical temperature, tested, machined inside and out; was reheated for closing-in at each end, reannealed all over at a lower temperature than at first; had the exterior of the ends turned and the throats bored, and was finally tested with an internal hydrostatic pressure of 4000 lb. per sq. in. without showing distress.

The pictures show the punched billet for the steam drum being lifted on the expanding mandrel; the drum partly drawn on the roughing mandrel; the forging before the preliminary machining, and finally the finished drum.

TO ENFORCE JONES ACT

Will Give Preferential Rail Rates to Goods Shipped in American Vessels

WASHINGTON, April 8.—The iron and steel and machine tool industries of the United States have taken no definite stand with regard to the enforcement of section 28 of the Jones Merchant Marine act, which would provide preferential rail rates to imports and exports carried in American ships. This section, unless something intervenes to prevent it, will become effective on May 20, for the first time since the Jones bill became a law in 1920. The enforcement of the act is not optional. It is compulsory under the law. Procedure is for the United States Shipping Board to certify to the Interstate Commerce Commission to establish these preferential rail rates and the Shipping Board was directed to make such certification when it feels assured that there is ample American shipping to take care of American foreign commerce.

The Interstate Commerce Commission officials can put only the lower rates into effect, but Chairman H. C. Hall of the commission, in a letter to Senator Ellison D. Smith, of South Carolina, has said that a law which in many cases will bring about higher rates over American railroads when the traffic is moved beyond the ports in foreign vessels than when it moves in American vessels, apparently affects the rights and interests of foreign countries, and there is always the possibility of retaliatory measures on the part of such countries. These and other reasons are given by Mr. Hall for opposition by the commission to the enforcement of the section, but, as Mr. Hall pointed out, the commission was not permitted to consider any ultimate question of policy such as whether the law will in all cases operate in the interest of American commerce or whether it may result in complications with foreign countries.

Hearings Held

Extensive hearings have been held before the House Committee on Merchant Marine on a bill which would take the authority from the Shipping Board and transfer it to the Interstate Commerce Commission, as it relates to enforcement of this section. Representative Walter H. Newton, of Minnesota, also has introduced a bill proposing that the effective date of Section 28 be postponed to July 1, 1925.

Railroads generally and many exporting interests, including oil and flour interests, have opposed the enforcement of this section, while representatives of the Shipping Board have vigorously supported it and others, including the automobile industry, have indicated that they are willing to give the section a trial. The great concern of most of the American interests is that there will not be ample American ships, but the Shipping Board insists that there will be sufficient space in American bottoms to take care of their needs. The Shipping Board has thoroughly discounted the talk of retaliatory measures by various nations against American shipping if the section is enforced, as it also has discounted the foreign propaganda that has arisen against the enforcement of the section, exactly as it has arisen in all instances wherever an attempt was made to upbuild the American merchant marine.

It is evident, however, that there is a great deal of sincere opposition by American interests to enforcement of the section, so that a statement that the attempt to defeat it is merely of foreign origin does not hold good.

Effect of Enforcement

The enforcement of the section would affect exports of iron and steel, machinery and other products, by allowing greatly reduced rates, inasmuch as they would be given the export rate when shipped in American bottoms as contrasted against the much larger domestic rate that will be charged on shipments in foreign bottoms.

It is a rather pitiful fact that while the Shipping Board has some 800 steel ships tied up, it is claimed that their operation would not be economical and would not fit in as a requisite for a well balanced merchant marine. It is therefore assumed that this enormous idle tonnage would not be used as a necessity to meet the contention that there will not be sufficient American ships to justify the placing into effect of section 28.

The matter of inadequate shipping space is only one contention made against the application of the section. Another point made is that while rail shipments involving exports and imports when carried in American bottoms are to be given the export rate as contrasted with the higher domestic rail rate, the latter to apply to shipments in foreign bottoms, yet domestic tariff regulations will control shipments moving in American bottoms. For instance, it has been explained, as now proposed, the American exporter would be allowed only the usual 48 hours free time, whereas it might be necessary to hold his goods in an American port for 10 days or some other such period before an American ship is available to move his products abroad.

In his letter to Senator Ellison D. Smith, of South Carolina, the differences in the domestic and export rates are pointed out in exhibits by Chairman H. C. Hall of the Interstate Commerce Commission. Some of the exhibits are published herewith:

Comparison of Export and Domestic Rates to Pacific Ports

From	Commodity	Rates to North Pacific Ports Domestic	Rates to North Pacific Ports Export	Rates to California Ports Domestic	Rates to California Ports Export
	Agricultural				
Cleveland	Implements CL	2.07	1.00	2.07	1.00
Indianapolis	"	2.00	1.00	2.00	1.00
Chicago	"	1.93	1.00	1.93	1.00
St. Louis	"	1.93	1.00	1.86	1.00
Kansas City, Kan.	"	1.72	1.00	1.72	1.00
	Structural				
Cleveland	Iron	1.15	.72	1.15	.72
Indianapolis	"	1.08	.59	1.08	.59
Chicago	"	1.00	.40	1.00	.40
St. Louis	"	1.00	.40	.95	.40
Kansas City, Kan.	"	.90	.40	.90	.40
Cleveland	Machinery	2.12	1.15	2.12	1.15
Indianapolis	"	2.03	1.15	2.03	1.15
Chicago	"	1.93	1.00	1.93	1.00
St. Louis	"	1.93	1.00	1.83	1.00
Kansas City, Kan.	"	1.74	1.00	1.74	1.00

Producer Gas-Fired Furnaces for Heating and Annealing

The use of producer gas-fired furnaces for heating, annealing and melting metals, alloys or glass, as well as for enameling, was recently discussed in a paper before members of the Birmingham Metallurgical Society at Wolverhampton, England, by Th. Teisen. Economy in fuel and better control of the temperature were pointed out by the author as the main advantages of such furnaces compared with the direct fired type.

The furnaces could be classified, he said, according to construction, into those having each their own producer, and those connected to a central producer. They could also be classified, according to the method of operation, into regenerative furnaces working on the system introduced by Siemens, recuperative furnaces working on the continuous system, and furnaces without heat recovery. The Siemens' system, as is well known, is applied to furnaces for working at high temperature in the making of steel and glass. The recuperative systems are also suitable for high temperatures, but stress should be laid on the point of combined safety and efficiency, also as the necessity of working with a fairly constant gas and air flow, and in this connection the horizontal plant has been found hitherto generally preferable to the vertical. With reference to the central producer plant, this has advantages in large works, and should be designed to burn ordinary local coal, since a great unnecessary drawback surrounded a plant which could only run on coke.

On the Continent, Mr. Teisen stated, the furnace engineer was given a greater scope than in this country, and large works were availing themselves of his services to a great extent. In regard to the oil-fired furnace, this was applicable in comparatively small plants, in larger ones a producer gas furnace was to be preferred.

USE OF ROLL SCOURING BRICKS

Continuous Scouring Better Than Periodic—Softer and Finer Bricks More Economical Than Hard

In rolling sheets more or less metal or scale is gathered up by the rolls, especially in hot rolling. This scale is picked up not only on the roughing rolls but also on the finishing rolls, and if not removed it causes objectionable depressions and raised spots on the finished sheets. To keep the rolls clean and smooth they are gone over at frequent intervals with abrasive blocks, known as "roll scouring bricks," the scouring not only keeping the rolls clean but also lengthening the time between regrinding. Roll scouring bricks and the manner in which they are used are dealt with in what follows, which is taken from the February issue of *Grits and Grinds*, published by the Norton Co., Worcester. The author is O. A. Nierendorf of the Norton company.

It is doubtful if the application of roll scouring bricks is identical in any two mills, but the principles involved are essentially the same. Cleaning is either continuous or periodic, depending largely upon the ideas of the men in charge. Periodic scouring is by far more common because most of the roll bosses have not yet been sold to the continuous method even though it is unquestionably better.

Most rolling, particularly on the smaller sheets, is done on a hand mill, which means that the material is handled back and forth by hand methods. The men can stand this work only so long without a rest period, so that it is standard practice to handle so many plates

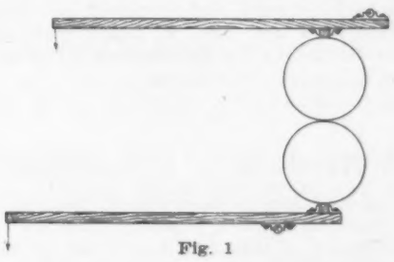


Fig. 1

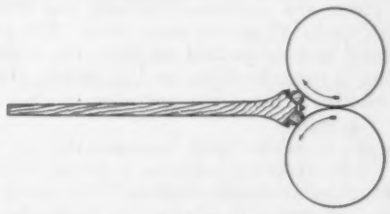


Fig. 3

The Various Methods of Applying Roll-Scouring Bricks are Shown in the Illustrations Above and Below. In Fig. 1, the bricks are held by two separate planks, Fig. 2 showing an actual off-hand scouring operation on the lower roll. In Fig. 3 two bricks are mounted at the end of one plank and held against the rolls by hand. A device used by cold rolling mills is shown in Fig. 4. The bricks are placed on wooden yokes and the pressure adjusted by the nuts on the connecting straps

Fig. 2

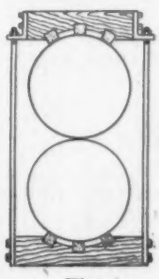


Fig. 4

Fig. 5 (At Right) Automatic Device for Roll Scouring

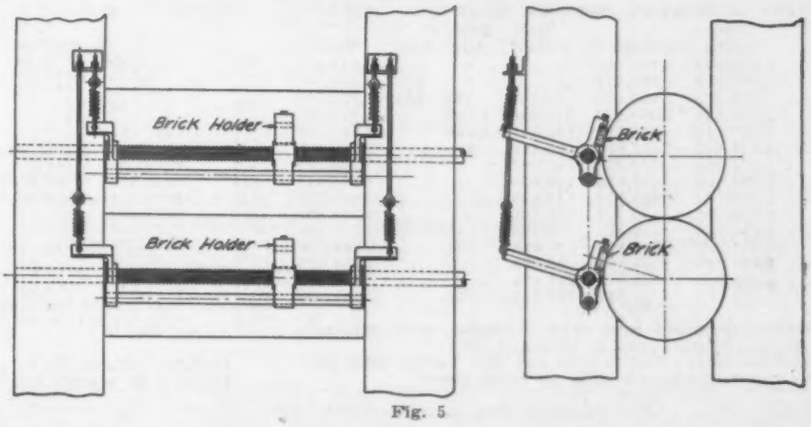


Fig. 5

on a charge from the heating furnace and then allow a rest period to the rollers. During this rest period special operators scour the rolls.

Fig. 1 illustrates the principle involved in this method of scouring. The levers are nothing more than wooden planks. The upper plank is inserted over the top roll and under a rod which is fastened to the frame of the machine parallel to the axes of the rolls and acts as a fulcrum. The roll scouring brick is clamped to the plank by a small steel or cast iron plate shaped to fit the taper of the bricks. The operator actually hangs on this plank with practically all of his weight. A similar plank with a brick attached is also used for scouring the lower roll. Fig. 2 shows an actual off-hand scouring operation on the lower roll. Note that the operator actually rides upon this plank. By canting the planks slightly the rotation of the rolls feeds the bricks across the face.

Another method, Fig. 3, involves the use of a single bar or plank with a holder at one end accommodating two bricks. These are positioned so that one brick is in contact with each roll at the same time. The plank is held by hand and is pushed against the rotating rolls. Scouring is usually done on the output side to avoid the possibility of abrasive particles or scale getting between the rolls.

Fig. 4 shows a device used occasionally by cold rolling mills. Two or three bricks are placed in wood yokes so that they come in contact with each roll simultaneously. Pressure is exerted by tightening the nuts on the connecting straps or rods. However, the cases of cold mill rolls where scouring is done are few and practically negligible.

In some mills automatic devices have been designed to do this work. Fig. 5 shows a line sketch of the principles on which continuous scourers operate. The bricks are held against the rolls by springs to maintain an even pressure and are fed across the face by a power-driven screw which reverses at each end. This method of scouring is very satisfactory and in one case where this continuous method replaced the hand method, the time between regrinding was increased over 50 per cent. Also much smoother and more accurate work was turned out.

Many shapes of roll scouring bricks are used, depending upon the requirements of the different mills. In general they are tapered to permit easy adaptation of a holding clamp. A typical and largely used size is 2 x 2-2½ x 5 in.

The majority of the bricks are made of crystolon abrasive, vitrified process, in grain sizes 46, 60, 70 and 80 predominating. The grades used vary from L to P, with grade M probably the most popular. In some instances where a high finish is desired, two or three blocks are used, starting with No. 36 or No. 46, medium about No. 70 or 80 and finishing with No. 120, all usually between grades L and M. The automatic devices require softer bricks, usually grades J and K in the same grain sizes.

Softer and finer bricks would be much more economical to the user, as the majority of hard bricks which are largely used are scrapped long before they are worn out. They crack sometimes from heat, but usually from a hacking operation performed by the operator at the end of each dressing. This is done with a small hatchet-like tool to remove the glaze, dirt, scale and grease which adheres. Some other arrangements for doing this work, such as grinding, might be equally effective and much more economical to use.

Most roll scouring bricks are used on the narrow sheet mills, although some of the larger sizes are also scoured. On the extremely large 6, 8 and 10-ft. rolls which are both crowned and convexed, no scouring is done. These rolls are used on heavy plate where a slight imperfection in the roll surface is not so objectionable as it is in the thin sheets.

A Handbook on Recuperation

Described as a loose-leaf handbook designed to help improve industrial furnace practice wherever possible, the Calorizing Co., Pittsburgh, has issued an attractive pamphet entitled "The Calco Handbook of Recuperation." It is a text book which contains data, tables, charts, drawings and photographs, published, it is claimed, for the first time. Much of the information in it is the result of pioneer investigation in industrial furnace applications conducted over a period of several years by engineers of the company. It is divided into 13 sections, treating various subjects such as a 70 per cent waste in fuel, what recuperation is and its advantages, principles of combustion, improvement of combustion by recuperation, reduction of oxidation such as scale by recuperation, influence of recuperation upon flame temperature, the theory of recuperator design and, finally, the calorizing process, together with a description of the Calco recuperator. The book sells for $3 per copy, but a limited edition is available for gratituous distribution among executives in plants operating oil, gas or coal fired industrial furnaces. There are 160 pages with 30 full page illustrations, 30 illustrations in the text, 63 full page charts with 11 charts in the text, and 5 pages of valuable tables. The size of the handbook is 8½ by 11 in.

Rail Production by Weights and Processes

As stated in THE IRON AGE last week, the total production of rails in the United States for 1923 was 2,904,516 gross tons. Additional information giving statistics as to the weight of the rails and the processes of production is given in the following tables:

PRODUCTION OF RAILS BY PROCESSES, GROSS TONS, 1909-1923

Year	Open-hearth	Bessemer	Re-rolled*	Electric	Iron	Total
1909....	1,256,674	1,767,171	.....	†	...	3,023,845
1910....	1,751,359	1,884,442	.....	†	230	3,636,031
1911....	1,676,923	1,053,420	91,751	462	234	2,822,790
1912....	2,105,144	1,099,926	119,390	3,455	...	3,327,915
1913....	2,527,710	817,591	155,043	2,436	...	3,502,780
1914....	1,525,851	323,897	95,169	178	...	1,945,095
1915....	1,775,168	326,952	102,083	....	...	2,204,203
1916....	2,269,600	440,092	144,826	....	...	2,854,518
1917....	2,292,197	533,325	118,639	....	...	2,944,161
1918....	1,945,443	494,193	101,256	....	...	2,540,892
1919....	1,893,250	214,121	96,422	50	...	2,203,843
1920....	2,334,222	142,899	126,698	297	...	2,604,116
1921....	2,027,215	55,559	96,039	5	...	2,178,818
1922....	2,038,000	22,317	116,459	....	...	2,171,776
1923....	2,738,779	25,877	139,742	118	...	2,904,516

*Rerolled from old steel rails. Included with Bessemer and open-hearth steel rails in 1909 and 1910.

†Small tonnages rolled in 1909 and 1910, but included with Bessemer and open-hearth rails for these years.

PRODUCTION OF RAILS BY WEIGHT PER YARD, 1907-1923

Year	Under 45 pounds	45 and less than 85	85 and less than 100	100 pounds and over	Total Gross tons
1907....	295,838	1,569,985	1,767,831		3,633,654
1908....	183,869	687,632	1,049,514		1,921,015
1909....	255,726	1,024,856	1,743,263		3,023,845
1910....	260,709	1,275,339	2,099,983		3,636,031
1911....	218,758	1,067,696	1,536,336		2,822,790
1912....	248,672	1,118,592	1,960,651		3,327,915
1913....	*270,405	†967,313	2,265,062		3,502,780
1914....	*238,423	†309,865	868,104	528,703	1,945,095
1915....	*254,101	†518,291	742,816	688,995	2,204,203
1916....	*295,535	†566,791	1,225,341	766,851	2,854,518
1917....	*308,258	†882,673	989,704	763,526	2,944,161
1918....	*395,124	†665,165	888,141	592,462	2,540,892
1919....	*263,803	†495,577	965,571	478,892	2,203,843
1920....	*489,043	†433,333	952,622	729,118	2,604,116
1921....	*211,568	†214,936	902,748	849,566	2,178,818
1922....	*265,541	†274,731	728,604	902,900	2,171,776
1923....	*272,794	†300,907	864,965	1,465,850	2,904,516

*Includes rails under 50 pounds.

†Includes 50 pounds and less than 85 pounds.

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THE IRON AGE

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A Year Ago and Now

IT was just a year ago that cautions were being sounded in view of possible dangers in the rapid expansion of steel business that had come in the first quarter of 1923. It was pointed out then by THE IRON AGE that the country's steel-making machine was working close to the limit of its productive power, as determined by the supply of available labor. Under such conditions it was shown that any unusual efforts by buyers aimed at accumulating raw material stocks would only put up prices unduly and increase the demand for credit without a corresponding increase in the volume of actual business.

It was apparent early in May of last year that the conservative influences in the steel industry were making an impression on the situation. So much so, that in our issue of May 3, 1923, when opinion as to what course steel production and prices would take was not nearly so unanimous as it was later, we said in an editorial on "Prolonging Prosperity" that so far as steel was concerned each week was testifying to the lessening danger of a runaway market.

The situation with which we have to deal now differs from that of the spring of 1923. Not so much in output is the difference seen, for steel ingot production last month, at more than 159,000 tons a day, set a new record for the country, representing a yearly rate of 49,500,000 tons, whereas in April, 1923, the previous record month, the rate was equivalent to 49,000,000 tons a year. Today, instead of the cautions that were called for in April, 1923, in view of the eagerness of some buyers to get hold of steel, and the premiums some of them were paying for early deliveries, there is a spirit of hesitation among consumers that may easily lead to an underestimate of the actual consumption of the products of blast furnaces and steel mills. It is significant that the comments of financial reviewers and economists are directed just now to pointing out the favorable factors in the situation—substantial factors, such as car loadings, bank clearings, full employment, large purchasing ability of workers, no strain in credits, light inventories, and for the most part steadiness in prices. This from the New York *Evening Post* is typical:

> Throwing apprehensions aside, the industrial situation does not seem discouraging. Everybody is working and at high wages. Purchasing power must be good. Production is intense and labor efficiency is high. There is no speculation or inflation. Prices are steady or tending toward slightly lower levels. Money is plentiful and credit positions are strong. This does not look like a situation out of which a crisis could grow; neither does it look like one which would be followed by a drying up of demand. On the other hand, it does give an indication of a good volume of business with fluctuations of a comparatively mild and brief character.

Meanwhile the steel trade has continued to demonstrate, as it did in much of the second half of 1923, that it can operate well and actually thrive without having a heavy accumulation of orders for forward delivery. Some reduction from the high rate of output in March will not be surprising, but the comment made in this column one month ago continues to be applicable, the situation being still free from any menace that would cause a sudden or great change.

It will be recalled that in April of last year there were predictions of a reaction like that of 1920. That the steel industry today, 12 months later, is producing at so high a rate is indication that the conservative counsels of April, 1923, did not harm business by creating distrust but actually aided, as they were intended to do, in the prolongation of prosperity.

The Lure of the Direct Process

WILL the operation of the iron blast furnace be radically changed? Or will the blast furnace process be displaced in part by another? The questions are suggested again by the article of J. Kent Smith in last week's IRON AGE, as well as by the important discussions of oxygenated air at the mining engineers' meeting in February.

In reducing iron ore in the blast furnace to pig iron there is necessarily introduced 3 to 4 per cent of carbon, most of which must be removed later in the process of making steel. This is not the case with iron castings, but the proportion of the world's pig iron output which finds its way into iron castings is relatively small. In our own industry less than 20 per cent of the 40,361,000 tons of pig iron made in 1923 was foundry iron.

In almost no other major metal industry is there the inefficient practice of introducing large percentages of an agent which later must be removed at great expenditure of heat and energy. With nearly 80 per cent of the reduction of iron oxide to iron in

a blast furnace accomplished by the same principle by which a direct process works, the latter is entitled to serious consideration.

There is also to be considered the low temperature at which the major part of the reduction of iron ore takes place—whether in the blast furnace or by the direct process. Advocates of the latter method point to the marked saving in fuel as well as the elimination of the impurities, metallic and gaseous, which the metal takes up under present practice. They perhaps overlook, however, the value of the numerous by-products of the modern coke plant. In his article of last week Mr. Smith contends that the perfection of the use of powdered coal and the strides that have been made in developing the rotary kiln warrant the serious trying out of the direct method.

It is likely that a good many years will pass before any radical departure from the present practice in iron ore reduction finds general use. With all that is urged for the direct process and with all the predicted benefits from the use of oxygen, the methods of today are firmly entrenched and the investment involved and the results attained argue against revolution. On the other hand the rise and decline of the Bessemer process in steel is suggestive.

Serious investigations of the direct process are now being made by important interests in this country, and in England the low temperature reduction of iron ore is being carried on with reported success. It is fair to say that interest in the subject has never been more alive and that the promise of practical achievement has never been greater.

The South Taking Southern Iron

PRESIDENT McQUEEN of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., said in his report covering the year 1923:

> For many years the great bulk of Southern foundry iron has been marketed north of the Ohio River. This condition has been gradually changing until now a larger proportion of the tonnage of your company is being sold in the Southern territory. This is attributable to the wonderful industrial development and expansion in recent years of the new South.

It has been said commonly in the past year that the ability of Southern furnaces to hold pig iron prices with better success than their Northern competitors have had was due to the increasing consumption of Alabama iron in Southern foundries. The prosperity of the cast iron pipe manufacturers of the South has been considered the principal factor in this enlarged Southern consumption.

It is true that the large amount of pipe laid by the municipalities all over the country in the past year or more, as well as the demand for soil pipe in connection with the unusual amount of building, has created an extraordinary demand for Southern pig iron in Southern territory. It has not been so well appreciated, perhaps, that the activities of Southern foundries producing radiator, stove, agricultural and engine castings, as well as cotton mill, sugar house and oil well machinery, have expanded greatly in the past 10 years or more. Thus there has been a steady increase in the consumption of foundry iron in the South, accented in the past year by the high rate of operations at pipe foundries. Thus Alabama blast furnaces have not had to absorb high rail freights to Northern markets in disposing of their pig iron, to anything like the extent of former years.

The result is that Southern foundry irons are not competing with Northern irons for the whole gamut of foundry uses, as was once the case. Today a considerable part of the Northern demand for Southern irons is on account of phosphorus content and softening qualities because of which consumers are willing to pay somewhat more than for the regular run of Northern irons.

It would be natural to expect that, with the expansion of steel production by the Tennessee Coal, Iron & Railroad Co., that subsidiary of the Steel Corporation would not be a producer of foundry iron to the same extent as in the past decade. However, there is no present indication of any change in the policy of the largest producer in its relation to the Southern foundry iron market.

Another Chapter in Coal

THIS month another chapter in the history of the coal trade began. The three-year agreement signed at Jacksonville last February between the operators of the central competitive field and the United Mine Workers, to run for three years from April 1, is recognized as an experiment, to see if the competition of non-union coal will be sufficient to break the power of the union to make trouble periodically.

While the signing of an agreement with the central competitive field usually has been followed by agreements in all other union territory, this time there has been delay in several fields, and it may be the union will lose a small percentage of the mines it lately has controlled.

Never before in the history of the union's power has there been a period of three years without opportunity to call a big strike. For a long time there were two-year agreements on the bituminous scale, broken in spots by minor strikes, but in the past six years there has been much more than a biennial disturbance. There was the strike of late 1919, and then there was the disturbance in the summer of 1920, when some substantial wage advances were given although an agreement was in force. The strike of 1922 lasted so long that there would have been much less than two years of peace if the usual agreement had been made, but the settlement was merely for the remainder of the single coal year, and later an agreement had to be reached for one additional year, this agreement expiring last month. Thus in the past six years there have been six disturbances or periods of uncertainty instead of the conventional three.

The ending of the old coal year was marked by rapidly declining production, the last week, ended March 29, showing 8,837,000 net tons of bituminous coal produced, making the daily average 17 per cent less than the 1,773,000 tons for the whole coal year. The high points in the coal year were daily averages of 1,997,000 tons in the week of Sept. 8 and 1,991,000 tons in the week of

Jan. 12, production in the last week of March being 26 per cent under these high rates.

While the decrease in production has been due in part to the disappearance of demand for domestic coal, uncertainty of buyers has been an important factor. Coal prices have been declining and have reached the lowest level since 1916, although they are nearly double pre-war prices. In the circumstances consumers are naturally hesitant.

One must not over-rate this three-year peace that is ahead. By no means will it be a period free from economic disturbance. It is an experiment to see if the transfer of trade from union to non-union mines will bring about, eventually, reasonable wage demands on the part of the union. The present transfer of trade involves a disturbance and if the trade finally returns there will be another disturbance. Many coal operators will suffer at the one time or the other, and so will many railroads.

These changes in the distribution of coal demand are particularly unfortunate for railroads and this is a serious matter. In the old days the railroads made very special efforts so to arrange coal freight rates as to divide the business among the roads, sometimes making rates that looked quite peculiar, all for the purpose of allocating the traffic. Now it is expected there will be a rush of business to non-union fields, giving certain roads much more business than formerly, other roads being correspondingly deprived. If the first mentioned provide facilities for handling the additional traffic they may find themselves later with useless capacity, if the diverted coal business returns to union fields. Thus while apparently there is peace for three years, some of the uncertainty that seems to be eliminated is transferred to the railroads.

The Farmers and Congress

WE hear a great deal about the deterioration of Congress and demands that the people elect men of a higher type. Certainly there are recurring incidents, such as the protracted boggling of the present Congress over income tax revision and its refusal to accept the President's recommendation for prompt reduction of the tax for 1923 by a simple percentage cut, which excite widespread vexation. We elect politicians and they play politics. Perhaps there has been deterioration in the character of Congress during the 135 years of its functioning; perhaps not; it would be difficult to pronounce positively. The founders conceived that the people would elect superior men to represent them. The same idea was embodied in the Electoral College, but it vanished there, from early in our history. Recent Congresses and the present one are probably pretty good samples of the people. In other words, democracy is functioning true to form. Indeed, it is not unlikely that Congress considered as a sample is probably better than is the general average.

It is to be conceived, therefore, that when individuals or groups or blocs in Congress conduct themselves in ways that irritate a good many of us they are not necessarily exhibiting personal vagaries and naughtinesses, but are reflecting some popular sentiment, perhaps a good deal. It would be indeed ideal if they were leaders and educators, and were projectors of thought instead of being reflectors, but that is not democracy in action.

We are worried by the conduct of the so-called farm bloc. We have a poor opinion of LaFollette, Brookhart, Magnus Johnson and their ilk. We must recognize, nevertheless, that the farmers and their families and employees constitute something like 30 per cent of our population, although, of course, they are not all wheat and corn farmers and stock raisers.

Now, the leading agrarian organization is the American Farm Federation Bureau. It is worth while to refer to its legislative memorandum adopted at its annual conference last December. It urged the adoption of Henry Ford's offer for Muscle Shoals, which is buncombe in so far as the farmers are concerned. It backed the Capper-French truth-in-fabric bill, which is good enough in purpose, though, perhaps, impracticable. It said that "something helpful should be done for the distressed wheat growers," without offering any suggestions. It favored a limitation of immigration, more appropriations for highways, and a variety of relatively immaterial things. It wanted also to look into the Interstate Commerce Commission's way of arriving at the valuation of the railroads, although any intelligent person ought to be able to see everything necessary respecting that matter in 10 minutes or so if it were lucidly explained.

The essence of the agrarian economic position, however, is to be found in the following declaration respecting taxation:

> The farmers insist that taxation be levied equitably and that all persons secure the benefits by right and not by courtesy or as a gratuity. Three of the cardinal principles for the basis of tax work are as follows:
>
> (a) The measure of ability to pay taxes for the support of the national Government is net income.
>
> (b) The tax should be progressive; that is, the greater the income the higher the rate.
>
> (c) In so far as it is practicable, taxes should be so laid as to tend to the equitable distribution of wealth.

The above is essentially socialistic, but the proposers of it do not know that, and do not know that it would be adverse to their own interests. The only time when farmers have any business to be flirting with socialists and communists is when there is land to be grabbed, as there was in Russia. If the farmers should become able to steal the railroads and manufacturing properties of this country from their present owners that would be the worst thing that could happen to themselves. Let us recognize that such is the agrarian sentiment, misconceived though it be, and that LaFollette & Co. are merely expressing it.

RAPID increase in the inflow of Continental steel into Great Britain is the feature of the first two months of this year. In some quarters it is regarded as menacing. Iron and steel imports, at 182,600 tons in January and 223,100 tons in February, or an average of 202,850 tons per month,

are larger than the monthly average of any year since the war. They are even larger than the 1913 or pre-war rate per month and compare with 127,800 tons per month last year. Semi-finished steel constitutes the bulk of the increase, most of it coming from Belgium. Over half the January-February shipments of sheet bars into Great Britain came from Belgium (and Luxemburg), the total imports per month being nearly twice the 1923 monthly average. Of ingots, billets, blooms and slabs in the same two months, over 45 per cent was Belgian. These increased receipts of crude steel mean so much less to be made by British mills and British workmen. The economic union between Belgium and Luxemburg is evidently functioning successfully. Steel output of both countries in January exceeded anything since the war and was larger than the average output in 1913. Hence the need for an outlet. The recovery of the Belgian steel industry is a marked feature of post-war European development. When Germany also recovers, the American steel trade will feel the effect of Continental competition both at home in seaboard districts and in trade with neutral countries.

Increased Rail Consumption

PRODUCTION of rails in 1923, just reported, amounted to 2,904,516 tons, this being the largest total in ten years, except that 1917 had a production 40,000 tons greater. Imports in 1923 were 29,706 tons, while exports were 267,409 tons, making the apparent consumption 2,666,813 tons, which is, by a margin of 225,000 tons, the largest consumption shown in ten years, or since 1913. Exports ran very heavy from 1916 to 1920 inclusive. The record for ten years is here given. Incidentally, the official figures for 1923 strikingly confirm THE IRON AGE estimate (issue of Jan. 3, 1924) given in the article, "Where the Steel Went in 1923," namely, that 9 per cent of the country's finished steel product rolled from ingots last year was rails.

Rails—Gross Tons

	Production	Imports	Exports	Balance
1914.....	1,945,095	22,571	174,680	1,792,986
1915.....	2,204,203	78,525	391,379	1,891,349
1916.....	2,854,518	26,299	540,828	2,339,989
1917.....	2,944,161	9,263	512,669	2,440,755
1918.....	2,540,892	8,705	453,537	2,096,060
1919.....	2,203,843	17,008	652,443	1,568,408
1920.....	2,604,116	45,684	594,628	2,055,172
1921.....	2,178,818	22,048	321,822	1,879,044
1922.....	2,171,776	26,629	277,090	1,921,315
1923.....	2,904,516	29,706	267,409	2,666,813

In an editorial in THE IRON AGE ten years ago (March 26, 1914), discussing the rail production statistics of 1913, it was said: "The history of railroad building in the United States naturally divides itself into two great eras, the first, of rapid building of new road; the second, of relatively light building of new road but of heavy expenditures for the improvement of old roads; in other words, increasing the capacity of existing roads." The decade since the above was written has constituted a new period, but it is not a third period of "railroad building," being a period in which the chief use of rails by the steam roads has been for upkeep.

The period of heavy building of new railroad line ended with 1890. The first year in which 1000 miles was built was 1849, while the first in which 5000 miles was built was 1870. The two greatest years were 1882, with 11,599 miles, and 1887, with 12,984 miles. In 1890, 5657 miles were built, and then building dropped off rapidly. So large a mileage was never again laid in a year, although 1906 came close, with 5643 miles. After 1890 there was a period of several years in which the railroads did almost nothing. Then began an era of improvements, with much heavier locomotives and with the steel car. Partly on account of the great increase in weight of rolling stock there had to be wholesale replacement of the light rails in service. There was also much laying of secondary track. The year of greatest railroad building, 1887, was marked by record production of rails, 2,139,640 tons, besides which 137,830 tons were imported while only 549 tons

The Iron Age and Its Readers

IN these weekly talks with our readers, it may not be amiss to refer now and then to achievements in which they have shared.

Last week we gave in brief the statistics of steel rail production in 1923 as collected by the American Iron and Steel Institute, and elsewhere in this issue are some of the details. When the 139,742 gross tons of rails re-rolled from old rails are subtracted from the total reported output for last year, the remainder, 2,764,774 tons, rolled from ingots, shows our estimate given at the end of the year in our Annual Review Number, Jan. 8, was only 20,226 tons too high or less than 1 per cent out of the way—in fact, about seven-tenths of 1 per cent. At that time we calculated rails to be 9 per cent (8.8 per cent, to be exact) of the total steel rolled in 1923. When the figures for total output of finished steel last year become available, we shall have a double check on the unique dependability of our analysis of "Where Steel Went in 1923," made possible by the excellent cooperation of producers.

Another accomplishment in which reader interest has been constant is our long-maintained market news service from Europe. It was a notable departure in market reviewing when in February, 1912, we began regular weekly cable reporting from London. Now in its thirteenth year, this service has been supplemented for many months with frequent reports by radio from Berlin. The noteworthy feature of our British service is that throughout the war period the industry here obtained its only dependable and continuous iron and steel reports from Europe in the market letters and cablegrams of our London correspondent.

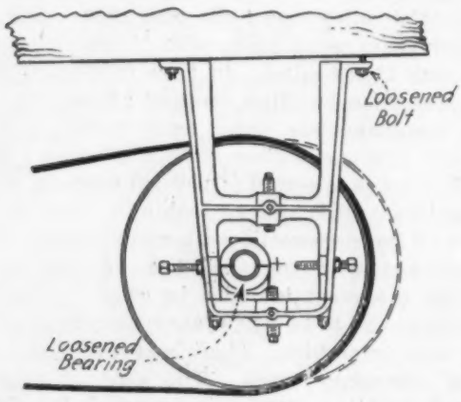
were exported, making apparent consumption 2,276,921 tons. The 1887 production record was not touched for 12 years, until 1899, but then there were exports instead of imports, and the consumption record was not broken until 1901, when the new era was in swing. Its high point was 1906, with 3,977,887 tons produced and 3,654,794 tons apparent consumption. Neither of these records has since been touched. The last year of somewhat similar consumption was 1913, with 3,052,635 tons.

In the past ten years the consumption of rails by the steam roads has been almost wholly in ordinary replacements, as rails have worn out. In 1923 the production of rails 50 lb. and over, exclusive of such rails exported and of girder and high T-rails, was 1,962,402 tons. A small portion of this tonnage went into industrial use and about 175,000 tons went into new track of the steam roads. Thus the replacements ran at a little over 1,500,000 tons, which may be taken as not far from normal for present conditions.

CORRESPONDENCE

A Handy Shaft Hanger Kink

To the Editor: Millwrights agree that it is bad practice to run a large belt onto a pulley by first forcing one of the edges to catch and then running the belt on either by hand or by power. It is well known that this is liable to cause the belt to stretch more on one side than on the other. The belt is thereby permanently injured. This holds true for belts of all kinds.



To avoid this condition we are often told to make leather belts endless while they are on the pulleys by means of belt clamps, etc., but that method may not always be practical and sometimes it is impossible, particularly if the belt has already been made endless by the manufacturers, as is often the case.

Where conditions allow it, a good kink for putting large belts onto the pulleys so as not to injure them is to loosen the adjusting screws on the hangers as shown in the sketch herewith. This permits the shaft to move over a considerable distance, temporarily shortening the distance between shaft centers. Sometimes the shaft may be moved inward 2 in. or even more, thus making it possible to put the belt on easily. Shortening the center distance 2 in. virtually adds 4 in. to the belt's length. To still further assist, one of the bolts for bolting the hanger to the overhead beam may be loosened so as to allow the hanger to swing inward still more. Where patented overhead beams are employed it is sometimes possible to slide the entire hanger forward without touching the adjusting screws. All of these methods are possible, yet they are seldom used because they are not thought of.

After the belt is on the pulleys the hanger may be brought back to its normal position. This is a simple thing to do by turning the nuts where the first and second methods mentioned above are employed. The original position of the hanger should always be marked before moving to avoid tedious realining. Turn the bearing adjusting screws back to their original positions. These positions are easily found because the screw on the opposite side and the top screw need not be moved at all as indicated in the sketch.

In the sketch, which is drawn slightly exaggerated to emphasize these points, the cross lines indicate where the center of the shaft will be after the beam bolt is retightened and after the adjusting screws are back to their original positions. The dotted curved lines show where the pulley rim will be after everything is retightened and back to normal.

This method, of course, is not always practical where there are belts running in both directions as on a common line shaft. But where it can be employed it is well worth while. It is a quick and simple method and the saving effected in large expensive belts surely makes it worth remembering and putting into practice.

W. F. SCHAPHORST.
45 Academy St., Newark, N. J.

Patent Office to Expand Force

WASHINGTON, April 8.—There are 200,000 applications for patents on inventions now pending in the United States Patent Office, according to a statement of the United States Civil Service Commission. To speed up action, Congress has authorized an appropriation which will permit the addition of 100 to the present examining force of 500. The Civil Service Commission will hold examinations on May 7 and later dates for positions of assistant examiner in the Patent Office. The entrance salary is $1,860 a year, and increases are provided up to $5,000 a year. Information concerning the examination may be obtained from the United States Civil Service Commission, Washington, or the secretary of the civil service board at the post office or custom house in any city.

The commission states that of approximately 80,000 applications for patents made annually, fully two-thirds relate to some phase of the automobile industry. The present system in the Patent Office of examination before issue was authorized by an act of Congress of 1836. The system has been copied by practically all large countries.

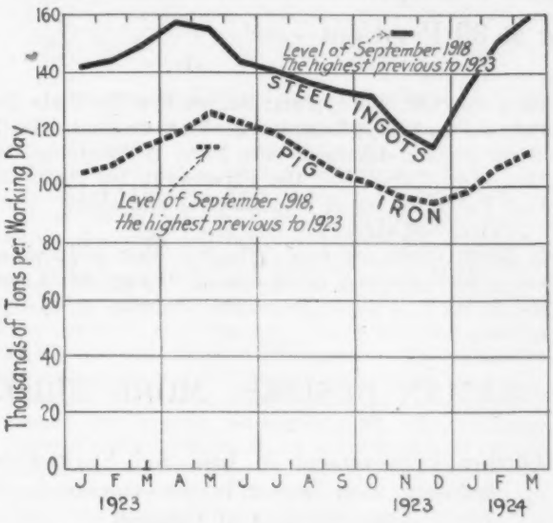
The American Association of Oil Burner Manufacturers, St. Louis, elected officers at their annual meeting in St. Louis, April 1, 2 and 3, as follows: President, Edward P. Bailey, National Airoil Burner Co., New York; vice-presidents, Ernest H. Peabody, Peabody Corporation, New York; L. P. Ordway, Jr., Winslow Boiler & Engineering Co., Chicago; A. M. Lockett, A. M. Lockett Co., Ltd., New Orleans; J. F. Voorheis, Coen Co., San Francisco, and Lionel L. Jacobs, Fess Oil Co., Toronto.

Records were broken at the plant of the Newport Rolling Mill Co., Newport, Ky., during the week of March 15. Twelve hot mills, working single turn, produced 2036 tons of sheets, an average of 10.6 tons a turn for each mill. The employees of the mill were tendered a banquet by the officials on the evening of March 15, as a recognition of the new record.

MARCH STEEL OUTPUT

Daily Production Largest Ever Recorded—Yearly Rate Over 49,500,000 Tons

A new record output of steel ingots was made in March. The daily rate last month of 159,455 gross tons exceeded by 1679 tons, or about 1 per cent, the peak



Ingot and Pig Iron Production of the Past 15 Months Show New High Records—Ingots Both Now and a Year Ago, Pig Iron Last Year

registered in April, 1923, of 157,776 tons per day. The March rate also exceeded the February daily output by 8228 tons or about 5½ per cent, and was unsurpassed by any achievement during the war. The production for the first quarter of the year exceeded that of the same period in 1923 by 202,289 tons or nearly 2 per cent.

The statistics of the American Iron and Steel Institute show that the March output of companies which made 95.35 per cent of the country's total in 1922 was 3,953,048 tons. Thus, assuming that the 4.65 per cent not reporting produced at the same rate a total March output is indicated of 4,145,829 tons. The equivalent annual rate is about 49,500,000 tons.

The table gives the production by months of the different kinds of steel, together with estimated daily rate for all companies.

Monthly Production of Steel Ingots, Reported by Companies Which Made 95.35 Per Cent of the Steel Ingots in 1922

Months 1924	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies, Gross Tons
Jan.	2,752,932	667,032	12,577	3,599,938	133,331
Feb.	2,894,872	695,905	14,085	3,780,663	151,227
March	3,230,986	706,801	15,261	4,145,829	159,455
3 mos.	8,878,790	2,069,738	41,923	11,526,430	147,775
1923					
Jan.	2,906,892	728,270	9,467	3,822,369	141,569
Feb.	2,613,564	669,903	10,797	3,454,918	143,955
March	3,046,309	799,525	12,841	4,046,854	149,883
3 mos.	8,566,765	2,197,698	33,105	11,324,141	145,181
April	2,974,579	772,485	13,933	3,944,412	157,776
May	3,136,558	847,418	16,719	4,195,800	155,400
June	2,821,239	737,845	15,483	3,748,890	144,188
July	2,658,449	680,884	11,496	3,514,241	140,570
Aug.	2,796,370	701,059	9,326	3,677,771	136,214
Sept.	2,551,490	613,709	8,602	3,328,580	133,143
Oct.	2,724,371	649,452	9,163	3,547,966	131,406
Nov.	2,343,368	616,335	9,309	3,113,804	119,762
Dec.	2,130,613	570,004	10,912	2,843,764	113,751
Total	32,703,802	8,386,889	138,048	43,239,369	139,033

FAIR EXPORT INQUIRY

Japanese Merchants Interested in Sheets—Low Quotations Made—German Boiler Tubes and Line Pipe Offered

NEW YORK, April 8.—Inquiry from Japan is increasing, but business placed is not yet large, probably because of the sizable stocks still available at Japanese warehouses. Bids on the 1100 pieces of 80-lb. rails and the 11,000 splice bars for the South Manchuria Railway Co. have been opened, but award of the business is not yet announced. A few small inquiries for light gage black sheets are in the market and one inquiry calling for a total of 1000 tons. While some of this may develop into business, exporters as a rule look upon these requests for prices as inquiries intended to test the market. Quotations of about $104 per ton, c. i. f. Japanese port, are understood to have been made on this business, but the price ideas of the Japanese merchants are close to $100 per ton, at which price some exporters believe sales might be possible. On steel bars it is claimed that prices as low as $51 per ton have been quoted, c. i. f. Japan.

The report that has been current in some quarters that resumption of the regular duties on various products exempted by the Imperial Government following the earthquake did not include black sheets is evidently without foundation. According to all information from Japan, including the reports received by the Commercial Attaché of the Japanese Embassy and the United States Bureau of Foreign and Domestic Commerce, all iron and steel products are now subject to the usual duties.

Importation of Continental steel by importers in the United States is apparently declining rapidly. Although tonnages are still being offered, these are, in most cases, lots purchased by the importer a month or more ago in France or Belgium. Some German material, however, is being offered at competitive prices, although, as a rule, German prices seem to be too high to interest American buyers. An importer in New York is offering locomotive boiler tubes from the Mannesmann Rohren Werke, Düsseldorf, Germany, at 3c. to 5c. per ft. under the current market, c.i.f. duty paid. Line pipe from this German source is also being offered and mechanical tubing of British origin is being quoted on at competitive prices.

Manganese Ore Imports in First Quarter

Imports of manganese ore from all countries during the first quarter of this year totaled 107,152 gross tons, according to statistics compiled by the Iron & Ore Corporation of America, 11 Broadway, New York. Of this total, 37,409 gross tons was Caucasian, 30,100 tons Brazilian, 25,878 tons Indian, 11,995 African and 1770 tons from other countries.

Officials of the Jackson Iron & Steel Co., Jackson, Ohio, state that there is no foundation for the report that the company had bought the properties of the Wellston Iron Furnace Co. at Wellston, Ohio. The Jackson company is not contemplating such a move, and officials are at a loss to account for the origin of the rumor. The Jackson Iron & Steel Co. recently increased its capitalization from $300,000 to $1,000,000, but this was done to provide additional working capital, and to pay for extensive improvements recently completed, and others in contemplation.

New revolving distributors of the McKee type will be installed on the new No. 2 blast furnace and on the No. 1 furnace of the Youngstown Sheet & Tube Co. at Indiana Harbor, Ind. The distributors will be supplied by the Arthur G. McKee & Co., Cleveland.

Europe Finds Improvement in Pig Iron

British Steel Demand Poor—Large Tin Plate Combine Formed—German Steel Prices Higher—Unemployment Less and Operation Now at 80 Per Cent

(By Cable)

LONDON, ENGLAND, April 8.

FOUNDRY and forge pig iron are strong on increased domestic and export demand, coupled with decreased output. Makers' stocks now are exhausted. Buyers have followed the rise and good sales have been made. The Continent is non-competitive.

Hematite is steady. Export demand is good, but domestic inquiry is poor, owing to the dullness in steel. Stocks are diminishing, but considerable quantities still are available. Foreign ore is quiet. Bilbao Rubio is nominal.

Finished steel is very dull and the position is threatened by possible lockout in the shipyards on Thursday. There have been a few small inquiries for plates, angles and rails for export, but substantial demand still is lacking.

Continental position is complex. It is reported that the works have sold heavily overseas direct. Little material is passing through the dealers' hands here. Practically no makers are quoting sterling prices. Merchants have sold plates at £8 (1.54c. per lb.) f.o.b.

Tension exists in France and Germany over the expiration of the M. I. C. U. M. contracts with the Ruhr industrialists April 15. The Germans are disinclined to renew the old terms, but the French attitude is firm.

Tin plate is quiet, but moderate sales still are passing. Some makers are offering May shipment. Others are full up for three months. A new company has been formed under the title of the South Wales Tin Plate Corporation, Ltd., with capital stock of £700,000, comprising Richard Thomas & Co., Ltd., Swansea; Grovesend Steel & Tin Plate Co., Ltd., Gorseinon; St. David's Tin Plate Co., Ltd., Loughor; Kidwelly Tin Plate Co., Ltd.; Villiers Tin Plate Co., Ltd., Briton Ferry; W. Gilbertson & Co., Ltd., Pontardawe; Ashburnham Tin Plate Co., Ltd., Burry Port; Baglan Bay Tin Plate Co., Ltd., Briton Ferry; Resolven Tin Plate Co., Ltd.; Neath, Terry & Co.; Alberavon Tin Plate & Stamping Co., Ltd., Port Talbot, and the Ffrwdwyllt Tin Plate Co., Port Talbot, to act as manufacturer and agent.

Galvanized sheets are dull and easier.

Black sheets are firm. The Far East is inquiring and some business is being done in 24 gage to 28 gage and in 6 x 3, 13's, 107 lb. at the minimum price.

GERMAN BUSINESS MORE BRISK

Further Improvement in Iron and Engineering Industry, with Higher Prices—Operating at 80 Per Cent of Capacity

BERLIN, GERMANY, March 19.—Conditions in German industry are improving. The number of unemployed in the unoccupied area decreased by about 10 per cent between Feb. 15 and March 1, and is given as 1,177,000 at the beginning of this month. In the occupied districts employment is also much better, but the number of those out of work and on short time is estimated to be still above 1,000,000.

While about three weeks ago iron and steel prices showed a downward tendency, the iron market is more brisk lately and prices have advanced. There is greater demand, as more liquid capital seems generally available, and stocks have to a great extent been used up; consumers who had been holding off in expectation of further price reductions are now placing their orders. Introduction of special export freight rates by the railroads, including iron and steel, iron and steel goods, and railroad rolling stock, will act as a stimulus to trade. Business in rolled iron is somewhat livelier and traders are replenishing their stocks. Demand in semi-finished material is especially strong, which may be attributed

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British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.32 per £1, as follows:

Durham coke, delivered	£1	10s.			$6.48	
Bilbao Rubio ore†	1	4			5.18	
Cleveland No. 1 foundry	5	0			21.60	
Cleveland No. 3 foundry	4	15			20.53	
Cleveland No. 4 foundry	4	14			20.31	
Cleveland No. 4 forge	4	13			20.09	
Cleveland basic	4	15			20.53	
East Coast mixed	4	19½	to £5	0s.	21.49 to	$21.60
East Coast hematite	4	19	to 5	0	21.38 to	21.60
Ferromanganese	17	0			73.44	
Rails, 60 lb. and up	8	10	to 9	10	36.72 to	41.04
Billets	8	0	to 8	5	34.56 to	35.64
Sheet and tin plate bars, Welsh	8	18¾			38.61	
Tin plates, base box	1	4¼	to 1	4½	5.24 to	5.29
					C. per Lb.	
Ship plates	9	5	to 9	15	1.78 to	1.88
Boiler plates	13	0	to 13	10	2.51 to	2.60
Tees	9	10	to 10	0	1.83 to	1.93
Channels	8	15	to 9	5	1.69 to	1.78
Beams	8	10	to 9	0	1.64 to	1.74
Round bars, ¾ to 3 in.	10	10	to 11	0	2.03 to	2.12
Galvanized sheets, 24 g.	17	15	to 18	0	3.42 to	3.47
Black sheets, 24 gage	13	10	to 13	15	2.60 to	2.65
Black sheets, Japanese specifications	15	5			2.94	
Steel hoops	12	10	& 12	15*	2.41 &	2.46*
Cold rolled steel strip, 20 gage	17	2½			3.30	

*Export price. †Ex-ship. Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

(Nominal)

Foundry pig iron:						
Belgium	£4	4s.	to £4	5s.	$18.14 to	$18.36
France	4	4	to 4	5	18.14 to	18.36
Luxemburg	4	4	to 4	5	18.14 to	18.36
Billets (nominal):						
Belgium	6	0	to 6	5	25.92 to	27.00
France	6	0	to 6	5	25.92 to	27.00
Merchant bars:					C. per Lb.	
Belgium	7	0			1.35	
Luxemburg	7	0			1.35	
France	7	0			1.35	
Joists (beams):						
Belgium	6	10 and upward			1.25	
Luxemburg	6	10 and upward			1.25	
France	6	10 and upward			1.25	
Angles:						
Belgium	8	0	to 8	5	1.54 to	1.59
¼-in. plates:						
Belgium	7	15			1.49	
Germany	7	15			1.49	
⅜-in. plates:						
Luxemburg	7	15			1.49	
Belgium	7	15			1.49	

to the fact that Lorraine and Luxemburg works are not in the market. Further price increases are expected. Present quotations are, in gold marks per metric ton, and converted at 23.82c. per mark:

	Marks	*
Billets	120.00	($29.04)
Sheet bars	122.50	($29.64)
Blooms	115.00	($27.83)
Bar iron	140.00	(1.57c.)
Structural shapes	135.00	(1.46c.)
Sheets, heavy	155.00	(1.67c.)
Sheets, medium	173.00	(1.87c.)
Plates, thin, down to 1 mm	188.00	(2.03c.)
Plates, thin, below 1 mm	200.00	(2.16c.)
Wire rods	165.00	($39.93)
Wire drawn bright	190.00	(2.05c.)

*In $ per gross ton or c. per lb., as indicated.

Bar iron from the Saar is quoted at 160 to 170 marks per ton (1.73c. to 1.84c. per lb.) in the Rhenish Westphalian district. The strong competition of the Lorraine, Luxemburg and Saar works has almost ceased, as these works are fully booked for some months. German, Lorraine and Saar quotations are at present nearly at parity, as the latter had to increase their prices. Therefore more inquiries and orders are coming in from all parts of Germany, even from the south, where French and Belgian goods were especially dumped, and the German works have orders to keep them fully employed for the next few weeks.

Greater demand has created a certain scarcity and customers are urging prompt delivery. The industry is generally employed up to 80 per cent of its normal capacity, and the works are making all endeavors to restart production on a broad basis. The Klöckner concern has restarted its Düsseldorf and the Phoenix concern is arranging for the restarting of its Düsseldorf-Oberbilk and Düsseldorf-Lierenfeld works.

In the Düsseldorf district the strike over increased working hours has lasted longer than in other parts of the country and some of the works are still working with only half their normal number of men. With the revival of business activity the transport of Lorraine ore to the German works has restarted. The strikes in the engineering works having come to an end, and this industry is showing a greater demand for iron products. The dockyards have also placed considerable orders.

Prices Stabilized

Cutting of prices has generally ceased and the guiding prices of the Stahlbund are again taken as a basis. Mill owners in the unoccupied area, which are now organized in the "Walzeisen Vereinigung" for the fixing of uniform prices, decided not to quote below 130 marks per ton (1.40c. per lb.) for bar iron and 150 marks per ton (1.62c. per lb.) for heavy sheets. A fortnight is mostly allowed for payment now. Generally prices are tending upward and bar iron cannot be had below 135 marks per ton (1.46c. per lb.). Hoop iron is quoted at 175 marks per ton (1.89c. per lb.). The iron traders are generally increasing their prices and they have again advanced them on the average by about 10 marks ($2.38) per ton. In Düsseldorf, for instance, a bar iron price of 180 marks per ton (1.95c. per lb.) is taken as a basis. Upper Silesian works are also well employed. Here bar iron is quoted at 135 to 155 marks per ton (1.46c. to 1.67c. per lb.), according to district. A few export orders have also recently been taken in lately.

The Association of Manufacturers of Iron and Steel Goods has petitioned the Minister of Transport for a further 10 per cent reduction in railroad freight rates. These rates were lowered by 8 per cent on Jan. 20 and by 10 per cent on March 1, but the association asserts that the rates for finished iron and steel goods are disproportionately high in comparison with the rates for raw materials, and that in many cases they increase the price to such an extent that the manufacturers in the western districts are at a disadvantage against firms further away from the raw material basis. Manufacturers of iron and steel goods in the West German districts have to pay the high rates for finished articles when sending their goods to consuming centers in other parts of Germany, while manufacturers farther away from the raw material basis are in a more favorable position, as they are simply paying the lower rate for their raw materials.

Pipe and Pig Iron

Trade in tubes is quiet, though demand has slightly improved lately. Generally consumers are holding back with orders. Unfavorable weather has retarded the resumption of building activity, and demand from this quarter has not yet set in. The Tube Manufacturers' Association (Röhrenvereinigung) has decided not to alter prices at present. The endeavors to form a new syndicate seem to have been definitely abandoned as fruitless.

In the pig iron market demand for some grades is beginning to liven up. The competition of French, Belgian and Luxemburg works in pig iron has slackened lately, especially in South Germany, which is to a great extent due to the improvement in the exchange rate of the franc. The German Pig Iron Association has therefore issued new prices for the South German districts, which come into force immediately. Foundry iron of Luxemburg quality is increased by 4 to 7 marks (97c. to $1.69), according to district, and foundry iron No. 1 and No. 3 by 5 marks ($1.21) per ton. The new quotations are: hematite 100 marks per ton ($24.20), foundry iron No. 1, 90 marks ($21.78); No. 3, 88 marks ($21.30); and Luxemburg quality, 79 marks ($19.12) at Wintersberg, and 84 marks ($20.33) at Rhenish-Westphalian works.

Scrap Imports and Exports

With the restarting of production on the Ruhr, scrap has become of greater importance again and it is expected that the trade will be very brisk during the next few weeks. During the war the scrap requirements of the German iron industry greatly increased, as the imports of foreign ore, which in 1913 totaled 14,019,045 tons, stopped eventually. The depreciation of the currency afterward made imports to the full extent of the demand impossible, so that scrap had to be resorted to to a greater extent and the open-hearth process received more attention. In order to control the entire traffic in scrap, the Government established a special scrap committee at the Eisenwirtschaftsbund, facilitated imports in every way, dropped the import duty from May, 1922, and also prohibited exports.

During last year, when the traffic in scrap was very quiet, owing to the stoppage of production on the Ruhr, export permits were again issued and imports decreased considerably. In 1913 the import surplus totaled about 17,000 tons. This had increased to about 500,000 tons during 1922. With the Ruhr struggle this changed drastically into an export surplus last year. While 600,983 tons were imported and 98,467 tons exported during 1922, the respective figures were 155,092 tons and 380,887 tons last year. The iron works advocate an embargo on further exports of scrap but it seems the Government is inclined to allow sales to Czecho-Slovakia and Austria.

Imports of Iron Ore

According to last year's official foreign trade statistics only 2,370,000 tons of iron ore were imported last year (compared with 11,000,000 tons during 1922). Of this, only 1,250,000 tons (about 5,000,000 tons in 1922) came from Sweden and 340,000 tons (1,330,000 tons in 1922) from Spain. In 1913 the imports of iron ore totaled about 14,000,000 tons, which had a value of about 233,000,000 marks ($55,500,000), while last year's imports were valued at only about 55,000,000 marks ($13,100,000).

Detroit Scrap Market

DETROIT, April 8.—The Detroit market on old material is the same as a week ago. Further reductions are reported in automobile manufacturing schedules, which are expected to be increased during May.

"Selling Engineers vs. Salesmen" is the title of a small pamphlet issued by the Simonds Saw & Steel Co., Fitchburg, Mass.

KEEN COMPETITION

British Iron and Steel Makers Have Trouble in Meeting Prices

WASHINGTON, April 8.—British iron and steel manufacturers and traders are manifesting genuine alarm over their inability to meet prices of competitors either in the home or dominions and other overseas markets. A report received in Washington states that American and continental competition is being felt with increasing keenness in all directions, particularly in many departments of constructional engineering, the machine tool trade and in railroad equipment. The recent loss of important contracts for locomotives for the Indian and the Egyptian State Railways for rails and fish plates in South Africa, and of machine tools and other orders to France and Czecho-Slovakia is declared to have brought about the grave realization that the export trade in these industries is actually being jeopardized by the substantial differences between British prices and those of competitors.

French, Belgian and German iron and steel quotations for delivery within the United Kingdom itself, the report says, have resulted in many home orders, municipal and private, going to the continent. It has been estimated that orders of this kind from England alone have been placed in the three continental countries named to the value of £1,000,000 in the past eight months. It is also stated that the reconstruction of the iron and steel industry in the Ruhr is viewed by the leaders of the industry in Great Britain with intense alarm.

In the presence of serious labor trouble with dockers and transport and carrier workers, political uncertainty at home and overseas, the fall in continental currencies, and the menace of a general coal strike, with low stocks of pig iron and the output barely equal to the demand, many iron and steel makers of Great Britain are represented as being frankly discouraged.

With the Indian Government asking for bids for the delivery of 60 additional locomotives, and the German price easily 25 per cent below the best British offers on those just awarded to a Hanover manufacturer, feeling in Great Britain is said to be running high. Talk of political pressure on the Indian Government is declared to be rife, but the question of price is realized to be the all-controlling factor. The British locomotive trade, it is pointed out, is entitled to place its views on the subject before the Indian authorities, but beyond that it is difficult to see what useful step could be taken.

Especial perturbation is caused, however, by the number of orders with Great Britain which have recently gone to the continent. The latest instance of British public money going to foreign firms is that at Bradford, where a contract for four motor converters has been given by the Corporation Electricity Committee to a Belgian company whose tender of £10,500 was £4,000 below that of the British price.

UNFAVORABLE TO CORPORATION

Examiner Bennett's Report in Pittsburgh Plus Case—Arguments to Be Submitted

WASHINGTON, April 8.—The report of Examiner J. W. Bennett of the Federal Trade Commission in the Pittsburgh plus case is unfavorable to the United States Steel Corporation.

While the commission is adhering to its policy of not making public reports of its examiners, that of Examiner Bennett in the Pittsburgh case apparently has already become a matter of current discussion in the trade. This is evidenced from statements coming to Washington from different reliable sources, all of which are unanimous in substance and are to the effect that Examiner Bennett's report is unfavorable to the Steel Corporation. Confirmation is not obtainable from the commission itself, but the reports received here are accepted as being accurate.

Like tentative reports of examiners of the Interstate Commerce Commission, always made public, those of examiners of the Federal Trade Commission are in no way binding upon the commission, but it is considered probable that the examiner's findings as to facts will have much weight unless shown by the Steel Corporation not to be well founded. The Federal Trade Commission is known to be divided in its attitude toward abolition of the practice of quoting generally upon the Pittsburgh basis, but the extent of the division is not known. It would require a majority vote either to issue a cease and desist order against the practice or to dismiss the complaint.

The report of Examiner Bennett consists of approximately 300 typewritten pages and is a detailed résumé of the long proceeding, and is said to give considerable attention to the question of interpretation of the sections of the Clayton and Federal Trade Commission acts under which the complaint was issued.

The next step in the case is the filing by Attorney H. K. Steinhauer of the brief for the commission. It is to be filed by May 22. This will be followed by the filing of a brief by June 9 of the Steel Corporation. It is also understood that briefs will be filed by intervening interests opposed to the Pittsburgh base practice. It is expected that exceptions to Examiner Bennett's report will be filed. Final argument before the commission has been set for June 23.

It is generally assumed here that if the commission should issue a cease and desist order, the Steel Corporation would appeal to the courts.

German Foreign Steel Trade in 1923

Germany's iron and steel exports for 1923 are given by *Stahl und Eisen* as 1,708,969 metric tons as compared with 2,654,677 tons in 1922. The returns are incomplete, due to the Ruhr occupation.

Imports in 1923 were 1,933,260 tons compared with 2,500,417 tons in 1922. Only 155,092 tons of scrap iron and steel was imported last year as against 600,983 tons in 1922.

H. H. Melville of the Air Reduction Sales Co. spoke Monday before the western New York chapter of the American Society of Heating and Ventilating Engineers in the Hotel Lafayette, Buffalo. M. J. Biern of the American Radiator Co. spoke on Business Conditions in the Industry.

COMING MEETINGS

April

National Metal Trades Association. April 23 and 24. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas Building, Chicago, secretary.

American Electrochemical Society. April 24 to 26. Spring meeting at Philadelphia. Dr. Colin G. Fink, Columbia University, New York, secretary.

American Gear Manufacturers' Association. April 28 to 30. Spring meeting, Lafayette Hotel, Buffalo. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

Institute of Metals Division of American Institute of Mining and Metallurgical Engineers and the American Foundrymen's Association. April 28 to May 3, inclusive. Annual convention, Hollenden Hotel, Cleveland. C. E. Hoyt, 140 South Dearborn Street, Chicago, secretary.

Society of Industrial Engineers. April 30 to May 2. Annual convention at Buffalo. George C. Dent, 608 South Dearborn Street, Chicago, general manager.

Superior Ore Prices Reduced 80 Cents

Sales Started at Lower Price Than Generally Expected— Most Conspicuous Inquiry Came from Ford Motor Co.

CLEVELAND, April 7.—Lake Superior iron ore prices for 1924 have been established at a reduction of 80c. a ton from the 1923 schedules. The new prices were set by a leading producer April 4 in several open market sales involving substantial tonnages. The new prices are: Old range Bessemer, $5.65; old range non-Bessemer, $4.90; Mesabi Bessemer, $5.40; Mesabi non-Bessemer, $4.75. A 35c. differential between old range non-Bessemer and high phosphorus ore will be maintained, the latter being quoted at $4.55.

The most conspicuous inquiry that resulted in the naming of prices was that of the Ford Motor Co. for 250,000 tons. The Ford business was divided between two or three sellers, but about 200,000 tons of it went to one producer who did not fix the new prices. The interest that established prices reports several open market sales to non-affiliated companies and other contracts closed with affiliated consumers involving over 1,000,000 tons. Sales by other ore companies outside of the Ford tonnage have been light. While considerable business is pending, a heavy open market buying is not expected to follow the naming of prices.

Prices of Lake Superior Iron Ore, 1890 to 1924

Season	Old Range Bessemer	Mesabi Bessemer	Old Range Non-Bessemer	Mesabi Non-Bessemer
1924	$5.65	$5.40	$4.90	$4.75
1923	6.45	6.20	5.70	5.55
1922	5.95	5.70	5.20	5.05
1921	6.45	6.20	5.70	5.55
1920	7.45	7.20	6.70	6.55
1919	6.45	6.20	5.70	5.55
*1918—To July 1	5.95	5.70	5.20	5.05
July 1 to Oct. 1	6.40	6.15	5.65	5.50
From Oct. 1	6.65	6.40	5.90	5.75
1917	5.95	5.70	5.20	5.05
1916	4.45	4.20	3.70	3.55
1915	3.75	3.45	3.00	2.80
1914	3.75	3.50	3.00	2.85
1913	4.40	4.15	3.60	3.40
1912	3.75	3.50	3.00	2.85
1911	4.50	4.25	3.70	3.50
1910	5.00	4.75	4.20	4.00
1909	4.50	4.25	3.70	3.50
1908	4.50	4.25	3.70	3.50
1907	5.00	4.75	4.20	4.00
1906	4.25	4.00	3.70	3.50
1905	3.75	3.50	3.20	3.00
1904	3.25	3.00	2.75	2.50
1903	4.50	4.00	3.60	3.20
1902	4.25	3.25	3.25	2.75
1901	4.25	3.25	3.00	2.75
1900	5.50	4.50	4.25	4.00
1899	3.00	2.40	2.15	2.00
1898	2.75	2.25	1.85	1.75
1897	2.60	2.25	2.15	1.90
1896	4.00	3.50	2.70	2.25
1895	2.90	2.19	2.25	1.95
1894	2.75	2.35	2.50	no sale
1893	3.85	3.00	3.20	no sale
1892	4.50	no sale	3.65	no sale
1891	4.50	no sale	4.25	no sale
1890	5.50	no sale	5.25	no sale

*Prices for 1918 established by the Government.

A price cut as much as 80c. per ton was a great surprise to most ore men and was not in line with the views of most ore firms, several of which wanted to hold to last year's prices because mining costs had not been reduced. It is declared that many mines will be unable to operate at a profit at the new prices and that some will be forced to suspend operations this year.

What appears to have been the leading influence that has resulted in the drastic price cut in ore was the low prices that have been named on pig iron during the last few months by steel companies having surplus pig iron, and by other producers who have led in the downward movement of pig iron prices and have sold iron below the production costs of merchant furnaces that have had to buy their ore in the open market. It is claimed that some pig iron producers having ore mines have for some time discounted fully an 80c. reduction on ore or have figured ore in their costs at that much reduction from last season's prices. It is pointed out that with the new prices both merchant furnaces and steel makers with blast furnaces but having no ore supplies will be in a relatively better position than at times in the past because they will be getting their ore nearly as cheaply as consumers who have their affiliations with or ownership in mines can produce the ore. Another factor that probably had something to do with the sharp price cut is the fact that some independent mining companies have been selling ore below the regular market prices, their aggregate tonnage amounting to considerable ore, and it is believed that prices are now down to a point where these mining companies will not care to shade regular quotations.

The new prices are not expected to result in any increase in the demand for Lake Superior ore in the East, as delivered prices will still be well above the present prices of foreign ore. Mesabi non-Bessemer ore will now cost over 13c. a unit delivered to Eastern furnaces as compared with a unit price of 9.50c. to 11c. for foreign ore delivered Philadelphia with less than 1c. additional for rail shipment to furnaces. The unit values of Lake Superior ore delivered Philadelphia based on this season's prices are as follows:

Old range Bessemer, 55 per cent iron, natural 0.045 phosphorus dry	11.364c.
Old range non-Bessemer 50.50 iron natural	10.680c.
Mesabi Bessemer, 55 per cent iron natural 0.045 phosphorus	10.909c.
Mesabi non-Bessemer, 51.50 iron natural	10.388c.
High-phosphorus ore, 51.50 iron	10c.

Ore prices last year were advanced 50c. a ton and the reduction this year brings the price 30c. a ton below those prevailing in 1922. In 1921 a price reduction of $1 a ton was made, bringing the schedule to prices that prevailed last year. With the new prices Lake Superior ore is now lower than in any year since 1916 when Mesabi non-Bessemer ore was $3.55. In 1917, with the advancing wartime prices, a $1.50 advance was made to $5.05 for Mesabi non-Bessemer, and starting with that year prices have been at a considerably higher level than prevailed before 1917.

When ore prices were marked up a year ago, basic pig iron was quoted at $31 in the Valley district or $9 above present prices, and the pig iron and steel markets were very firm and showed an upward tendency as compared with the lack of firmness in the market at present. Below is shown the comparison in prices between Mesabi non-Bessemer ore in the years named and basic pig iron in the Valley district in April in the last few years:

	Mesabi Non-Bessemer Ore	Basic Pig Iron
1923	$5.55	$31.05
1922	5.05	20.00
1921	5.55	22.88
1920	6.55	42.40
1919	5.55	25.75
1918	5.05 to $5.75	32.00
1917	5.05	38.75
1916	3.55	18.13
1915	2.80	12.50

An oil engine of 1750 brake horsepower, capable of supplying the ordinary lighting requirements of a town of 40,000 inhabitants, will be built by the Bethlehem Steel Co. for the Tonopah Extension Mining Co. at Tonopah, Nev. The engine will weigh about 325 tons and will be shipped via the Panama Canal.

Iron and Steel Markets

MARKETS GROW QUIETER

Steel Output in March at a New High Rate

Keener Competition on Finished Steel—Ore Price for 1924 Is 80 Cents Lower

The week has brought further signs of a quieter steel market just as figures are published showing that steel production in March was at a daily rate exceeding the previous high record of April, 1923. While the rate of steel consumption has changed but little, some lessening in rolling mill operations is indicated for April.

At 4,145,829 tons of steel ingots in 26 days, the daily rate last month was 159,455 tons, against an average of 157,776 tons for the 25 days in April, 1923. In other words, steel was made in March at a yearly rate of 49,500,000, while the previous record rate was 49,000,000 tons a year. It was known that an unusual stretch for high production was made last month, especially by Steel Corporation subsidiaries.

A significant event of the week was the sale of 250,000 tons of Lake Superior iron ore to the Ford Motor Co. at $4.75 a ton for Mesabi non-Bessemer ore. This establishes a basis for 1924 ore sales at 80c. below the opening price of 1923. The reduction is 30c. more than had been expected, but the fact is that throughout the year there had been shading of the 1923 ore price, which at the start was $5.55 for Mesabi non-Bessemer.

Reports from Pittsburgh, Chicago and Cleveland agree that competition in finished steel is increasingly keen and that the reduction of output by automobile plants has reached greater proportions, exceeding 25 per cent with some makers. Steel producers are not now looking for as large a consumption of steel for automobiles in 1924 as in 1923.

Pittsburgh basing is more frequently disregarded, as various mills have gone farther afield than usual in reaching out for business. The Chesapeake & Ohio Railroad, in seeking to buy on its own account the steel for 3000 cars it plans to have built, got bids as low as 2.15c., Pittsburgh, for plates, shapes and bars, while two large Pittsburgh producers bid 2.35c. These cars are still pending, as some builders are willing to bid only on cars for which they themselves buy the steel.

Railroad equipment buying, including 2000 cars and 500 hopper car bodies, was the best in three weeks. Signs are that car and locomotive business has not yet stopped. Not counting 12,000 freight car bodies bought by the Pennsylvania Railroad, freight cars ordered in the first three months of the year numbered 55,000, or nearly 55 per cent of the total for 1923.

Structural steel bookings for the week were barely 12,500 tons and fresh inquiries call for less than 10,000 tons. The same halting was noticeable five weeks ago, yet in the intervening period awards have averaged 30,000 tons weekly and inquiries 43,000 tons.

Weather conditions continue to affect the movement of wire products for farm use and to postpone the increase of working schedules at implement works.

The effect of the reaction in the automobile industry is seen in the recession of cold rolled strip steel, Chicago reporting that as low as 4.50c., Pittsburgh, has been done, while hot rolled has sold quite below 2.75c.

The plate market is less active, since purchases were made some time ago for the railroad cars placed in February and early March, and tank and boiler makers are not fully employed.

On the Eastern seaboard the first shipments of German structural shapes have arrived and are offered at 2.30c. f.o.b. Philadelphia, or $6 a ton below domestic prices. The inflow of Continental steel does not now promise to be large, as prices abroad have advanced apart from the recovery in the franc.

The reduction in Lake ore prices, it is expected, will be used by pig iron buyers in urging further reductions in that market, and it is probable that the next buying of iron will be at somewhat lower prices. Furnace operators feel, however, that the reduction in ore has been discounted by the heavy decline in pig iron since ore prices were advanced about a year ago. Selling of pig iron in the past week has been limited to small tonnages and prices have not been tested.

Both of THE IRON AGE composite prices remain unchanged this week, pig iron at $22.59, compared with $30.86 one year ago, and finished steel at 2.703c. per lb., compared with 2.810c. one year ago.

Pittsburgh

Curtailment of Manufacture of Automobiles Reflected in Some Steel Prices

PITTSBURGH, April 8.—The steel market has grown definitely quieter in the past week. The leading producers in Pittsburgh still are getting business which, with orders previously booked, is sufficient to keep up production to approximately the recent rate, but this is not true of the producers in the nearby districts. Bookings of Pittsburgh mills are not keeping pace with shipments and a downward turn in plant operations is believed to be close at hand.

Expectations of an early revival in business are not

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Apr. 8, 1924	Apr. 1, 1924	Mar. 11, 1924	Apr. 10, 1923
No. 2X, Philadelphia‡	$23.26	$23.26	$24.13	$33.14
No. 2, Valley furnace†	*22.00*	22.50	23.00	31.00
No. 2, Southern, Cin'ti†	26.55	26.55	26.55	31.05
No. 2, Birmingham, Ala.†	22.50	22.50	22.50	27.00
No. 2 foundry, Chicago*	24.50	24.50	24.50	32.00
Basic, del'd. eastern Pa.	21.50	21.50	21.50	30.25
Basic, Valley furnace	21.75	21.75	22.00	31.00
Valley Bessemer del. P'gh.	24.76	24.76	25.26	32.77
Malleable, Chicago*	24.50	24.50	24.50	32.00
Malleable, Valley	22.50	22.50	22.50	31.00
Gray forge, Pittsburgh	23.76	23.76	23.76	32.27
L. S. charcoal, Chicago	29.15	29.15	29.15	36.65
Ferromanganese, furnace	107.50	107.50	107.50	125.00

Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	40.00	40.00	40.00	45.00
O.-h. billets, Pittsburgh	40.00	40.00	40.00	45.00
O.-h. sheet bars, P'gh.	42.50	42.50	42.50	47.50
Forging billets, base, P'gh.	45.00	45.00	45.00	52.00
O.-h. billets, Phila.	45.17	45.17	45.17	50.17
Wire rods, Pittsburgh	51.00	51.00	51.00	50.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.30	2.30	2.30	2.35
Light rails at mill	2.00	2.00	2.00	2.25

Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.52	2.52	2.57	2.825
Iron bars, Chicago	*2.35*	2.40	2.40	2.60
Steel bars, Pittsburgh	2.30	2.30	2.40	2.50
Steel bars, Chicago	2.40	2.40	2.50	2.84
Steel bars, New York	2.64	2.64	2.74	2.84
Tank plates, Pittsburgh	2.30	2.30	2.40	2.50
Tank plates, Chicago	*2.50*	2.60	2.60	2.84
Tank plates, New York	2.54	2.54	2.64	2.84
Beams, Pittsburgh	2.30	2.30	2.40	2.50
Beams, Chicago	*2.50*	2.60	2.60	2.84
Beams, New York	2.59	2.59	2.69	2.84
Steel hoops, Pittsburgh	2.90	2.90	3.00	3.30

Sheets, Nails and Wire,	Apr. 8, 1924	Apr. 1, 1924	Mar. 11, 1924	Apr. 10, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.75	3.75	3.75	4.00
Sheets, galv., No. 28, P'gh.	4.90	4.90	4.90	5.25
Sheets, blue an'l'd, 9 & 10	*2.85*	2.90	2.90	3.25
Wire nails, Pittsburgh	3.00	3.00	3.00	2.90
Plain wire, Pittsburgh	2.75	2.75	2.75	2.65
Barbed wire, galv., P'gh.	3.80	3.80	3.80	3.70
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$6.00

Old Material, Per Gross Ton:				
Carwheels, Chicago	$17.00	$17.00	$20.50	$28.50
Carwheels, Philadelphia	*17.50*	18.50	19.00	27.00
Heavy steel scrap, P'gh.	*17.00*	17.50	20.00	26.00
Heavy steel scrap, Phila.	*15.50*	16.00	17.00	24.00
Heavy steel scrap, Ch'go	*14.50*	15.00	17.00	23.00
No. 1 cast, Pittsburgh	19.00	19.00	20.50	28.00
No. 1 cast, Philadelphia	*18.00*	18.50	18.50	27.00
No. 1 cast, Ch'go (net ton)	*18.50*	19.00	20.50	26.50
No. 1 RR. wrot., Phila.	*18.50*	19.00	19.00	28.00
No. 1 RR. wrot. Ch'go (net)	13.00	13.00	14.50	20.50

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.75	$3.75	$4.15	$6.25
Foundry coke, prompt	4.75	4.75	5.00	7.75

Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.75	13.75	14.25	17.37½
Electrolytic copper, refinery	*13.25*	13.37½	13.75	17.00
Zinc, St. Louis	6.30	6.22½	6.55	7.45
Zinc, New York	6.65	6.57½	6.90	7.80
Lead, St. Louis	8.25	8.70	9.50	8.15
Lead, New York	*8.50*	9.00	9.50	8.40
Tin (Straits), New York	51.00	50.62½	58.50	46.50
Antimony (Asiatic), N. Y.	*10.25*	11.75	11.25	8.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, April 8, 1924, Finished Steel, 2.703c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

April 1, 1924,	2.703c.
March 11, 1924,	2.746c.
April 10, 1923,	2.810c.
10-year pre-war average.	1.689c.

Composite Price, April 8, 1924, Pig Iron, $22.59 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

April 1, 1924,	$22.59
March 11, 1924,	22.86
April 10, 1923,	30.86
10-year pre-war average.	15.72

very strong. Curtailment of automobile production appears to be much greater than early estimates. Local estimates are that the cut by some companies is nearly 40 per cent from first quarter average. The automotive industry over the past five months produced vehicles in numbers sufficient for a record spring demand and it is figured that weather conditions have cost the industry at least three weeks' sales. There is time for the disposal of stocked cars, since all good weather is ahead, but few in the steel industry now regard the automotive industry as likely to better the 1923 production or to be a larger user of steel this year than last year.

With general business on a smaller scale than it was earlier in the year, it is figured that demands upon the railroads will not be on a sufficiently heavy scale to cause them to make many more purchases of rolling equipment. Reports from the agricultural implement manufacturers are not particularly encouraging and weather conditions still are adverse to a free movement of wire products into the hands of the farmers. New structural business also is on a tapering scale. With spring planting fully three weeks late over much of the country, there is a possibility that the crops will be backward and that there may not be a demand for tin plate for containers of sufficient proportions to create a shortage during the summer when hot weather takes its toll of mill labor.

Prices generally are soft, particularly on automobile steels, in which there has been much revision of specifications and suspensions against a considerable tonnage. Desire for business on the part of mills is increasing as order books decrease and recent maximum prices on most products now have little basis in sales. Every producing district has its own quotations and producers in one district seeking business in another have to meet the price conditions.

Trading still in pig iron is at low ebb, and prices show a weaker tendency, this being due largely to the efforts

of middlemen to dispose of their purchasers of last November, while there is still a profit. Producers are making an effort to hold prices, but this is rendered difficult by the reduction in ore prices which consumers have translated into a reduction in producing costs of $1.60 a ton on pig iron.

The scrap market still lacks strength and the gap between pig iron and scrap has grown so wide as to provide an additional bearish factor in pig iron in the encouragement to substitute scrap as a cheaper material. Practically no market exists for coal and coke. Prices are below costs, but there is not enough demand to enable producers to get the prices to which they think they are entitled.

Pig Iron.—A clear line on actual prices is difficult because there is so little business. Merchant producers generally are holding to recent prices, but are selling only small lots and in the few sizable inquiries lately before the market the business has gone elsewhere. A quotation of $22 Valley furnace for 500 tons of basic iron from the Lima, Ohio, consumer was not interesting to the buyer, which was able to place the business at a price equivalent to not over $21, Valley furnace basis. Middle interests have expressed a willingness to take orders for basic iron at $21, but no sales that low have been made in this district. It is doubtful whether $23 could be obtained for Bessemer iron in any considerable quantities and on foundry iron a price of $22 Valley furnace has appeared, although not by producers. A local maker of rolls and rolling mills was quoted $22 Valley furnace for a No. 2 grade on an inquiry for 300 tons. A very much lower Valley equivalent price has been reported, a consumer at Oil City, Pa., having been named a price of $20.25, Buffalo, which would mean a delivered price of $22.77 and a Valley equivalent of $21. We note a sale of 500 tons of No. 3 foundry to a local car builder at $22, Johnstown. Merchant producers generally take the position that present prices of pig iron fully discount the reduction in ore prices for 1924. Based on a price of $4.75 lower lake docks for Mesabi non-Bessemer ore and two tons of ore to a ton of pig iron, the ore item would be $9.50, while 1 1/10 tons of coke at $3.75 per ton would mean a coke charge of $4.03 and there is about 65c. worth of limestone, making a total material cost on today's prices of $14.18. Freight on direct ore to the Valleys on two tons would be $1.85, the freight on the coke required $2.50 and on the limestone 25c., a total of $4.60, and a total charge for materials and freight of $18.78. The cost above materials is at least $3.50 a ton with most merchant furnaces and there would therefore be an indicated cost of $22.28. It is asserted that it will be mid-summer before the lower priced ores will be going into the furnaces and that the bulk of the coke on contract for the present quarter carries a price of $4.25 a ton at Connellsville.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$21.75 to $22.00
Bessemer	23.00
Gray forge	22.00 to 22.50
No. 2 foundry	22.00 to 23.00
No. 3 foundry	22.00 to 22.50
Malleable	22.50
Low phosphorus, copper free	29.00

Ferroalloys.—Trading locally is at a very low ebb, but there seems to be no undue anxiety on the part of producers for business and recent prices are holding well. It is believed that an attractive inquiry for spiegeleisen would bring out a lower price, but on ferromanganse the market is best described as firm. British producers of the latter are believed to have rather high cost averages on ore; at least this is the most common explanation of their failure to cut prices in the face of decreasing order books. Prices are given on page 1117.

Iron and Steel Bars.—The market has quieted down considerably on steel bars, as most of the makers of cold-finished steel bars have had much tonnage suspended and naturally are not specifying as freely as formerly on their bar contracts. With prices growing easier, there naturally is not much inclination on the part of other consumers to buy freely. While the public quotation of all mills in this district is 2.40c., base Pittsburgh, they are going lower in outside districts and it is commonly accepted that 2.30c. base can be done here. Activity also is lacking in iron bars, with prices little more than steady.

We quote soft steel bars, rolled from billets, at 2.30c. to 2.40c. base; bars for cold finishing or screw stock analysis, $3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.15c. to 3.25c. base, in carload lots or more, f.o.b. Pittsburgh.

Semi-Finished Steel.—There is so little open market activity that if there is a definite trend to prices, it is not readily discernible. Most of the nonintegrated manufacturers have regular supply sources and are believed to be protected against their requirements for the present quarter, the prices mentioned in such arrangements being $42.50 for sheet bars and $40 for billets and slabs. Specifications are said to be coming along satisfactorily in sheet bars, although sheet business is not brisk and much of it is at prices below the levels upon which the price of sheet bars was predicated. Tin plate makers still are busy, but production so far this year has been so well ahead of other years for the same period that some makers are beginning to develop room for additional business for production between now and July 1. The report about billet and slab specifications conforms closely to the reduced demand for the finished products, notably strips, call for which has been materially reduced by the lower rate of automobile production. We continue to quote skelp at 2.30c., but there is so little demand that this price is untested and nominal. The rod market is slow, but evidence of price cutting is lacking. Prices are given on page 1117.

Wire Products.—Weather conditions still are unfavorable to business. Country roads are in such shape that the farmers cannot get to town to buy and the jobbers are moving so little material that their demands upon the mills are necessarily limited. Ordinarily, farmer buying of wire products accounts for fully half of the total production of the wire mills, and the loss of much of this business is not easily made good in other directions, especially as the weather has operated against building work. The decline in the production of automobiles also affects the demand, particularly for spring wire for cushions. Coated nails still are weak and while there is fairly good observance of quotations in other directions the market cannot be called strong, because competition for business is rather keen and there is much equalization of freights with other districts. Prices are given on page 1116.

Steel Rails.—Light rails rolled from billets no longer can be quoted above 2c. base, mill, as that price now is not being exceeded even on small tonnages. There is no positive evidence that less has been done, but there is not enough demand to furnish a test. It is said that competition from rail steel rails is greater than it has been on such business as is offered and that such rails can be had at less than the quoted prices.

We quote light rails: rolled from billets, 2c. base (25-lb. to 45-lb.); rolled from rail steel, 1.85c. to 1.90c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, $43 per gross ton mill, for Bessemer and open-hearth sections.

Tubular Goods.—A relatively good business still is being done in pipe and some makers have found the demand for merchant pipe, which was inclined to lag recently, has actually improved in the past week. General demand is below what it was at this time last year and the mills are not as heavily pressed in getting out requirements as was the case a year ago. Capacity is pretty nearly sufficient for the present demand. It is now reported that the McCorkle Pipe Line Co. will place the order for the line to run from Oklahoma and Texas to the Gulf of Mexico on April 15. This line calls for 870 miles of pipe of sizes from 3 in. to 10 in. Boiler tubes sell with difficulty and there is so much competition for business that quotations do not have very close relation to what is actually being accepted. Prices of seamless tubes are being cut rather severely. Discounts are given on page 1116.

Sheets.—Buyers still are very conservative and find that such a policy pays, since more mills are willing to

take business at $2 a ton below the Steel Corporation prices than recently was the case and some mills will make an even greater concession to secure orders. Less than 3.75c. base recently has been done on black sheets and sales of blue annealed at 2.85c. base are appearing. Makers of automobile sheets in this district still are fairly busy, but are getting some suspensions, due to the lower rate of automobile production, which now is estimated to be in some cases 40 per cent below that for the first quarter. The maker of a popular low-priced car is reported to be down to 65 per cent of the recent peak rate and the largest maker of a line of low to high priced cars is understood to have cut production about 50 per cent. The most favorable phase of the automobile business is that the accumulation of cars came at this time, instead of a couple of months hence, and that there is still time for the marketing of cars now in stock. Sheet mill operations as a general proposition are holding at about 80 per cent. Prices are given on page 1116.

Tin Plate.—Naming of third quarter and last half prices on tin plate is not likely until late this month. There is much interest in the price for these periods, on account of the stiff advance in the price of pig tin as compared with that ruling when present tin plate prices were announced. The advance in pig tin is equal to 18c. to 20c. a base box on tin plate, but there is some doubt that this will cause the leading interest to raise its prices. It does not look now as though there would be any shortage of tin plate for packers' cans, since production over the first quarter of this year was so heavy that full shipments could not be made and mill stocks are somewhat heavier than usual. Moreover, the planting season is two to three weeks late over much of the country and there is a possibility that packing will not get started as early as usual. Certainly there is some capacity for second quarter production that was not expected earlier in the year. The price still is $5.50 per base box, Pittsburgh, for standard coke tin plate.

Cold-Finished Steel Bars and Shafting.—This line still feels the effect of the reduced rate of automobile production, which, with some companies, is not more than 60 per cent of the recent average. Revisions of specifications and suspensions still are being made and there are few releases against suspensions placed a short time ago. Other consuming industries are sparing buyers and the market is really quiet. Makers, however, are holding firmly to 3c. base Pittsburgh, because it is not believed a lower price would help business and it is also claimed that present prices of hot-rolled bars do not permit a reduction. Ground shafting holds at 3.40c. base mill.

Hot-Rolled Flats.—On the narrow widths makers in this district have not found it necessary to go below 2.90c. base to secure business and on small orders still are getting 3c. Material wider than 3 in., or what is strictly strip steel, however, is hovering right around 2.75c. base on the bulk of the business. Occasionally more is obtained, but the explanation is in the size of the order or some other special consideration that gives the maker an advantage. Prices are given on page 1116.

Cold-Rolled Strips.—Curtailment in automobile production materially restricts orders and specifications for this product, since it finds its greatest outlet in that industry. Some mills claim to be getting 5c. base, but the tonnages involved are small and there are few such sales. The prevailing price is 4.75c., because just now there is not enough business to provide all makers with an economical producing schedule.

Track Supplies.—There is no change in prices, but conditions are working into buyers' favor, since producers are steadily reducing their order books, with new business in much smaller volume than shipments against old ones. Prices are given on page 1116.

Steel Chain.—Some manufacturers have announced an advance of $5 per ton in steel chain to a base of $6.25 base per 100 lb. for 1-in. proof coil chain. The price was reduced from $6.50 to $6 on Jan. 10 last, and there is some surprise over this advance in view of an impression that all makers recently had not been adhering rigidly to $6.

Structural Material.—On large structural beams a quotation of 2.50c., base Pittsburgh, is now merely an ornament, and on tonnages of any size 2.40c. is a common top and the right sort of an order would bring out 2.30c. from local mills for local delivery, as it is already doing in outside districts. Local fabricating shops are finding awards few and prospective business lighter than was the case recently. Prices given on page 1116.

Plates.—Business in this product is slower than in any other because requirements for railroad cars have been distributed and tank and boiler makers are not getting enough business to be much interested in supplies. There is no change in the price range, but as a sales basis, 2.50c., base Pittsburgh, has practically disappeared, even locally. Few of the independent mills have much backlog business in plates. Prices are given on page 1116.

Bolts, Nuts and Rivets.—Business in these products still is insufficient to give all makers their share, and competition for orders still is sharp enough to warrant the statement that more business is going on makers' books at concessions than at the quoted prices. Discounts and prices are given on page 1116.

Coke and Coal.—There is no quotable change in either coke or coal prices. We still quote spot furnace coke at $3.75 to $4 per net ton at ovens, and tonnages for shipment over the remainder of this quarter of the year probably could be placed at the same prices. There is not enough demand for second quarter tonnages to definitely establish prices. Foundry coke for spot delivery still ranges from $4.75 to $5.50. Some firmness is observed in slack coal, not because of a big demand, but because there is so little demand for prepared sizes that the supply of slack is very limited. There has been no late business to speak about, and demand for domestic purposes is declining, as usual, at this time of the year. These demands call for lump coal exclusively. Consumers generally are heavily stocked and are drawing upon their reserves rather than make first purchases. This tendency offsets the effect of greatly reduced production upon prices. We quote mine run steam and coking coal from $1.50 to $2 per net ton at mines; mine run gas coal $2 to $2.25; slack at $1.40 to $1.60 for steam and $1.50 to $1.75 for gas.

Old Material.—Trend of prices still is downward, as there is very little interest in the market on the part of melters and enough material is coming out which must be sold to give buyers willing to take on these supplies the sayso on prices. The most recent sale of heavy melting steel was at $17, and that constitutes the market this week, since there have been no sales at less and more cannot be obtained. Machine shop turnings are slightly firmer this week on a few fair-sized sales, but almost all other grades have declined in price. Rather good prices were obtained on recent sales of Pennsylvania Railroad scrap; knuckles, couplers and springs sold at above $20, but on sales direct to consumers.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	$17.00
No. 1 cast, cupola size	$19.00 to 19.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to 20.00
Compressed sheet steel	15.50 to 16.00
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	19.50 to 20.00
Railroad coil and leaf springs	19.50 to 20.00
Low phosphorus blooms and billet ends	20.00 to 20.50
Low phosphorus plate and other material	19.50 to 20.00
Railroad malleable	16.50 to 17.00
Steel car axles	19.50 to 20.00
Cast iron wheels	17.50 to 18.00
Rolled steel wheels	19.50 to 20.00
Machine shop turnings	13.25 to 13.75
Sheet bar crops	18.00 to 18.50
Heavy steel axle turnings	16.50 to 17.00
Short shoveling turnings	14.00 to 14.50
Heavy breakable cast	17.00 to 18.00
Stove plate	14.00 to 14.50
Cast iron borings	14.00 to 14.50
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	17.00

Chicago

Prices Show Softening Tendency—Production at High Rate

CHICAGO, April 8.—With buying restricted to nearby requirements and with competition increasingly keen, as evidenced by efforts of outside mills to invade this market, prices on the heavier forms of finished steel are showing greater flexibility. Plates and shapes are now available from Western sources at from 2.50c. to 2.60c., Chicago, while the range on soft steel bars is 2.40c. to 2.50c. Bar iron has also been affected, having been sold at as low as 2.35c., Chicago mill.

Local mills are probably better booked than outside producers, but this fact does not lessen their concern about obtaining their share of new business, particularly when there is less new tonnage in sight. Oil tank and freight car purchases, which have been two of the most important sources of heavy tonnage, have practically ceased. Fabricating awards and inquiries have also tapered off noticeably, and the automobile industry has shown no recovery from its recent slump. As to railroad car orders, however, it is probably too much to expect a continuation of the high rate of buying which obtained in the first quarter. Not counting 12,000 freight car bodies bought by the Pennsylvania, freight cars ordered in that period numbered 55,000, or nearly 55 per cent of the total for the year 1923. Nevertheless, the present market situation is generally quiet and buyers regard lower prices as a logical development of various contributing factors. They believe the 80c. a ton reduction in ore prices is significant and also call attention to the fact that fuel is considerably cheaper than a year ago. Mills, on the other hand, contend that basic conditions are fundamentally as sound as ever, and that the diminishing scale of buying is due to timidity engendered by national politics.

Whatever may be the future course of the market, it is still true that steel output in this district is practically at capacity. A small blast furnace at Joliet, however, has been blown out for repairs. Among the primary materials, scrap has again declined, although not so generally as heretofore, while pig iron is exceptionally quiet.

Pig Iron.—Buying is at a minimum and new demand is usually light. A Milwaukee melter is inquiring for 400 tons of foundry, while a local plant has closed for 500 tons of Southern foundry for barge and rail delivery over the next five months. This iron was bought at a delivered price competitive with quotations on material from local furnaces. A sale of 100 tons of Southern foundry for all-rail shipment to a local user was negotiated at $23 base, Birmingham. A Chicago buyer has closed for a carload of 10 per cent silvery and there have been a few carlot sales of charcoal. In a few instances melters serving the automobile industry have held up shipments, but on the whole deliveries from Northern furnaces are going ahead at the same rate as heretofore. Apparently automotive foundries are completing work still on their books, but are receiving few new orders for castings.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or, when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago..	$29.15
Northern coke, No. 1, sil. 2.25 to 2.75	25.00
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	24.50
Malleable, not over 2.25 sil	24.50
Basic	24.50
High phosphorus	24.50
Southern No. 2	$28.51 to 29.01
Low phos., sil. 1 to 2 per cent, copper free	33.00
Silvery, sil. 8 per cent	37.29
Electric ferrosilicon, 14 to 16 per cent	45.42

Plates.—The market is lacking in new orders for oil storage tanks and railroad cars, but the mills are still receiving specifications applying against old car orders. One local mill has booked 18,000 tons of plates, shapes and bars from car builders. Plate producers, however, are in need of new business and competition among them is keen. Mills East of here are quoting 2.25c. base Pittsburgh, or the equivalent of 2.59c. delivered Chicago. Prices of Western mills have given way following this attempted invasion of their market and 2.50c. base Chicago is no longer an uncommon quotation.

The mill quotation is 2.50c. to 2.60c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Ferroalloys.—A number of sales of ferromanganese for third quarter delivery, aggregating 300 to 400 tons, were negotiated at $107.50, seaboard. Spiegeleisen is quiet.

We quote 80 per cent ferromanganese, $115.06, delivered; 50 per cent ferrosilicon, $75, delivered; spiegeleisen, 18 to 22 per cent, $42.56 to $43.56, delivered.

Bars.—Although Chicago mills still have comparatively comfortable bookings in soft steel bars, they are being pressed on all sides by outside competition. Mills East of here are particularly active in Indiana and Michigan, as well as in the Twin Cities, where they are taking advantage of a low combination Great Lakes and rail rate. At St. Louis and Kansas City, the competition of local mills is felt. Under the conditions prices in Chicago and immediate vicinity are stronger than in outlying points. The range in the market continues to be from 2.40c. to 2.50c. Chicago. Bar iron is weaker, with some business moving at as low as 2.35c. Chicago. Rail steel bars are unchanged at 2.30c. mill but production is tapering off as a result of poor fence post demand.

Mill prices are: Mild steel bars, 2.40c. to 2.50c., Chicago; common bar iron, 2.35c. to 2.40c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 4c. for rounds and 4.50c for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.75c. base; hoops, 4.45c.; bands, 3.95c.

Bolts and Nuts.—Cancellations and suspensions from the automobile industry have not strengthened the market and specifications from the farm implement industry are disappointingly small. Discounts generally quoted are those on page 1116, except that in this district they are based f.o.b. Chicago. Large rivets are quoted at $3 to $3.15 per 100 lb. Chicago, while small rivets are had at from 70 and 5 to 70 per cent off Chicago.

Jobbers quote structural rivets, 3.75c.; boiler rivets, 3.95c.; machine bolts up to ⅝ x 4 in., 55 and 5 per cent off; larger sizes, 55 and 5 off; carriage bolts up to ⅝ x 6 in., 50 and 5 off; larger sizes, 50 and 5 off; hot pressed nuts, squares and hexagons, tapped, $3.50 off; blank nuts, $3.50 off; coach or lag screws, gimlet points, square heads, 60 and 5 per cent off.

Cast Iron Pipe.—Shorewood, Wis., has placed 150 tons with United States Cast Iron Pipe & Foundry Co. Barberton, Ohio, has rejected bids on 2300 tons. St. Paul takes bids today on 3700 tons of large diameter pipe. Steubenville, Ohio, received tenders yesterday on 165 tons of 6- and 8-in. United States Cast Iron Pipe & Foundry Co. is low bidder on 3300 tons for Milwaukee. Prices are firm.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $60.20 to $62.20; 6-in. to 10-in., inclusive, $56.20 to $58.20; 12-in. and above, $55.70 to $56.20; class A and gas pipe, $5 extra.

Wire Products.—Business during the past week has shown moderate improvement and, if favorable weather continues, further gains are expected. The mills, however, have not accumulated much of a backlog. A local hardware jobber has announced reductions on woven wire fencing, staples and barbed wire. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1116.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, 3.65c. to 3.80c. per 100 lb.; cement coated nails, 3.10c. to 3.25c. per keg.

Sheets.—The market remains quiet, with the price situation substantially unchanged. Several Japanese inquiries appeared last week, one of them calling for a large quantity of light black sheets. The specifications, however, were not regarded as attractive by local producers.

Mill quotations are 3.75c. to 3.85c. for No. 28 black, 2.90c. to 3c. for No. 10 blue annealed and 4.90c. to 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 4c. for blue annealed; 4.70c. for black and 5.60c. for galvanized.

Rails and Track Supplies.—Bookings of local mills during the week have been confined to miscellaneous orders for track supplies, including one lot of 3500 kegs of spikes and 1000 kegs of bolts, another of 2500 kegs of spikes and 1500 kegs of bolts and a third of 1800 tons of tie plates. The local quotation of 2.25c. on light rails is little more than nominal in view of low prices named by outside producers.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.10c. mill; track bolts with square nuts, 4.10c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.75c. base, and track bolts, 4.75c. base.

Structural Material.—Lettings of structural work for the week are unusually light, barely exceeding 1600 tons, and new inquiries are few. However, the general contract for the New Palmer House, Chicago, involving 17,000 tons, has been placed with the Thompson-Starrett Co., and it is understood that fabrication will be awarded to the Morava Construction Co. and a number of other independent fabricators. Sharp competitive bidding is being developed by current structural inquiries, indicating that fabricating shops are not so well booked as earlier in the year. Mill prices also reflect greater pressure on the part of the mills for new business. Producers East of here are quoting 2.25c. Pittsburgh on plain material, or 2.59c. delivered Chicago. From Western sources shapes can now be bought at as low as 2.50c. Chicago.

The mill quotation on plain material is 2.50c. to 2.60c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Reinforcing Bars.—The keen competition in the reinforcing field is indicated by the fact that a Cleveland company invaded this market and took 400 tons for a Chicago warehouse for the Great Atlantic & Pacific Tea Co. Prices are considerably weaker and the top of the market appears to be 2.75c., Chicago warehouse. A number of large projects are at the point of closing, among them the Snelling-Mendota Bridge, Minneapolis, 1000 tons, and the Soo Line ore dock, Ashland, Wis., 800 tons. Track elevation work in connection with the electrification of the Illinois Central right-of-way in this city will involve 2500 tons. The general contract for the New Palmer House has been awarded and the concrete bars, amounting to 2000 tons, will be bought before the close of the current month. Lettings include:

Great Atlantic & Pacific Tea Co., warehouse, Chicago, 400 tons to Bourne-Fuller Co.

Westinghouse Electric & Mfg. Co., plant addition, Homewood, Pa., 300 tons to Kalman Steel Co.

Illinois State road work, 400 tons to Kalman Steel Co.

Mazer Cigar Co., five-story factory, Detroit, 200 tons to McRae Steel Co.

Sheridan Trust & Savings Bank building, Chicago, 185 tons to Joseph T. Ryerson & Son.

Illinois State road work, 150 tons to Concrete Steel Co.

Hotel Duluth, at Duluth, Minn., 1000 tons to American System of Reinforcing, Milwaukee branch.

Motley School, Minneapolis, 120 tons to Concrete Steel Co.

Reamer Building, South Bend, Ind., 100 tons to Concrete Steel Co.

Pending work includes:

Western Shade Cloth Co. plant, Chicago, 450 tons, Kalman Steel Co. low bidder.

Illinois Central Railroad, track elevation work in connection Chicago electrification project, 2500 tons.

Stevens Hotel building, Chicago, 2000 tons.

Strip Steel.—The reaction in the automobile industry has had an adverse effect on cold-rolled strip prices, as evidenced by the fact that as low as 4.50c. base, Pittsburgh, has been done. Hot-rolled strip is also weaker, with some business moving at as low as 2.50c. base, Pittsburgh.

Old Material.—Following a consumer purchase of a few thousand tons of heavy melting at $15 per gross ton delivered, the market has continued to sag, although to a less marked extent than heretofore. Certain grades, notably low phosphorus classifications, are holding their own. Railroad malleable, which has been showing considerable resistance as compared with other grades, broke again this week when a large consumer placed orders at $20 per gross ton delivered. Purchases by dealers to fill expiring orders remain the one sustaining influence in the market. Railroad offerings include: Wabash, 3800 tons; Santa Fe, 3000 tons; Pere Marquette, 1800 tons; Chesapeake & Ohio, 1300 tons; Chicago & Eastern Illinois, 1000 tons; Chicago Great Western, 900 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$18.50 to $19.00
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	18.00 to 18.50
Railroad tires, charging box size	18.00 to 18.50
Railroad leaf springs, cut apart	18.50 to 19.00
Rails for rolling	17.00 to 17.50
Steel rails, less than 3 ft.	18.50 to 19.00
Heavy melting steel	14.50 to 15.00
Frogs, switches and guards cut apart	15.00 to 15.50
Shoveling steel	14.25 to 14.75
Drop forge flashings	11.50 to 12.00
Hydraulic compressed sheets	12.50 to 13.00
Axle turnings	13.50 to 14.00
Steel angle bars	16.50 to 17.00
Steel knuckles and couplers	18.00 to 18.50
Coil springs	19.00 to 19.50
Low phos. punchings	16.50 to 17.00
Machine shop turnings	8.00 to 8.50
Cast borings	12.50 to 13.00
Short shoveling turnings	12.50 to 13.00
Railroad malleable	19.50 to 20.00
Agricultural malleable	18.50 to 19.00
Per Net Ton	
Iron angle and splice bars	17.50 to 18.00
Iron arch bars and transoms	18.00 to 18.50
Iron car axles	25.50 to 26.00
Steel car axles	17.50 to 18.00
No. 1 busheling	11.00 to 11.50
No. 2 busheling	8.50 to 9.00
Cut forge	13.00 to 13.50
Pipes and flues	8.50 to 9.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	13.00 to 13.50
No. 1 machinery cast	18.50 to 19.00
No. 1 railroad cast	18.00 to 18.50
No. 1 agricultural cast	18.00 to 18.50
Locomotive tires, smooth	16.00 to 16.50
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00
Brake shoes	15.50 to 16.00

Reduction of Wages of Coal Miners and Coke Workers Under Consideration

PITTSBURGH, April 8.—While there continues to be much talk of a wage reduction in the Connellsville district mines and coke ovens, none of the larger producing interests in that district has taken any definite step in that direction. Some of the smaller coal producers who do not operate coke ovens have made wage cuts and that also is true of some of the smaller coke producers. These interests have gone back to the 1917 scale, which calls for a wage of about $4.50 a day for day labor and in some instances to an even lower rate, but the capacity and production embraced in these cases form only a small percentage of the whole.

It is claimed that present coke and coal prices on the present wage scales mean a loss and that a full restoration of the 1917 scale is necessary for profitable operation at today's selling prices. The leading interest shows no disposition to revise wages and none of the other producers seems willing to take the first step.

An examination for junior engineers will be held throughout the country on May 7 to fill vacancies in various branches of the Government service, at an entrance salary of $1,860 a year. Application blanks may be obtained from the United States Civil Service Commission, Washington.

New York

Hesitation in Iron and Steel Buying and Prices Appear Weak

NEW YORK, April 8.—The reduction of 80c. per ton in the price of Lake Superior iron ores will, it is expected, be used as an argument by buyers of pig iron in favor of lower prices, and it is generally expected that the next buying movement will be at a lower level, although furnace operators point to the fact that the price of pig iron has declined from $9 to $5 per ton, according to the various grades, since iron ore prices were advanced in March, 1923. The strike of iron molders at Newark, N. J., has resulted in the sharp curtailment of operations in that city, and some shipments of pig iron will be held up, but it is not expected that the strike will be prolonged. The Worthington inquiry for 1750 tons for June and July delivery and the New York Central inquiry for 500 tons for second quarter have not been placed and show a general tendency of buyers to hesitate at the present time. Sales of the past week amounted to only 4000 to 5000 tons, and very little tonnage is pending. Buffalo iron can be had as low as $21 and eastern Pennsylvania at $22. Sales of Virginia iron last week amounted to nearly 1000 tons. It is expected that a number of blast furnaces will be blown out at an early date, as it is evident that there is at present an over-production of pig iron. Temple furnace has already gone on the idle list.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	$25.27 to $25.77
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	24.77 to 25.27
East. Pa. No. 2, sil. 1.75 to 2.25	24.27 to 24.77
Buffalo, sil. 1.75 to 2.25	25.91 to 26.41
No. 2X Virginia, sil. 2.25 to 2.75	31.44
No. 2 Virginia, sil. 1.75 to 2.25	30.44

Ferroalloys.—Demand for ferromanganese is still confined to purchases of carload and small lots for early delivery at regular prices. There is no large inquiry for future delivery before the market. The same situation prevails in the spiegeleisen market, with the demand even lighter than for ferromanganese. No developments are noted in the manganese ore market and there has been no new business of consequence in the ferrosilicon or ferrochromium markets.

Cast-Iron Pipe.—Demand continues fair, but the scarcity of municipal tenders from the New England district is noticeable. Prices are unchanged. The 2000 tons of 20-in. and 30-in. water pipe included in the contract let by the Department of Water Supply, Gas and Electricity, New York, to the Kelly Contracting Co., is understood to have been placed with the Donaldson Iron Co. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $61.60 to $63.60; 4-in. and 5-in., $66.60 to $68.60; 3-in., $76.60 to $78.60, with $5 additional for Class A and gas pipe. Purchasing of soil pipe is light but prices are still holding fairly firm with makers booked ahead about six weeks. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows: 6-in., 29½ to 30¾ per cent off list; heavy, 39½ to 40¾ per cent off list.

Warehouse Business.—A fair volume of small orders is the rule with most sellers from stock. Prices are holding fairly firm, following the recent reduction of 5c. per 100 lb. made by the leading interest and met by other warehouses in this district. This drop in price was for the purpose of adjusting current jobbing prices to the Pittsburgh schedule. Warehouse prices have for some time been on a mill basis of 2.45c. per lb., Pittsburgh. It is stated that a leading warehouse interest in this district has lately resumed a practice abandoned some time ago of giving a differential price to jobbers purchasing from stock. In this case it is understood that a concession of $3 per ton is allowed when material is delivered or $4 per ton when the purchasing jobber buys, f.o.b. warehouse. Sheets are still holding quite firmly to the price of 4.85c. per lb. for black and 5.85c. per lb. for galvanized. We quote prices on page 1136.

Finished Iron and Steel.—A further decline in the volume of steel buying is reported by all steel companies. Not only is the general run of current orders from manufacturing consumers and jobbers at a reduced rate, but special projects, such as structural work, are being held up. A good deal of such work is pending, but there is more hesitation in signing contracts. Prices of the heavier products, plates, shapes and bars, are weak and show a declining tendency. Plates are now available in carload lots from some mills in the East at 2.20c., Pittsburgh, while structural shapes at 2.25c. and 2.30c., Pittsburgh, and merchant bars at 2.30c. to 2.35c., Pittsburgh, are to be had from nearly all mills. In special instances steel bars have been sold at 2.25c., but this has been only on very attractive tonnage. Bar iron remains at 2.20c., Pittsburgh, but is weak. Pipe and tin plate are outstandingly the strongest of all steel products. Sheets are weak in that some concessions are being offered, as has been the case for weeks. Wire products continue to hold fairly well. The local market is devoid of interesting features. In the structural field the largest pending project is 8000 tons for the Western Electric Co. plant at Kearny, N. J., and this may be awarded this week. The Baltimore & Ohio Railroad, it is reported, will come into the market shortly for 8000 cars.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.64c. to 2.69c.; plates, 2.54c. to 2.59c.; structural shapes, 2.59c. to 2.69c.; bar iron, 2.54c.

Coke.—Despite curtailed production, the market continues weak and prompt shipment carloads of standard foundry are quotable at from $4.75 to $5.25 per ton while standard furnace is obtainable from as low as $3.75 to $4.25 per ton. By-product has been reduced 50c. per ton to $10.41, Newark and Jersey City, N. J.

Old Material.—Quietness continues with only small purchases by consumers, and plenty of scrap of all grades apparently available. The downward tendency of prices is still strong. Heavy melting steel, although still being bought in a few cases at slightly higher prices to fill old contracts, is generally quoted at $15 to $15.50 per ton, delivered eastern Pennsylvania. There is some activity in borings and turnings, which are being bought at $13 to $13.50 per ton delivered eastern Pennsylvania consumers. Machine shop turnings and cast borings are also quoted at about $13.50, delivered to consumers in eastern Pennsylvania. Stove plate is weaker, $15 being paid for delivery to Harrisburg and Phoenixville, Pa., or to a Bridgeport, Conn., consumer, while $14 is paid for delivery to a New Jersey consumer with a $2.02 freight rate. Forge fire is worth about $14 per ton, delivered Parkesburg, Pa.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$11.50 to $12.00
Steel rails, short lengths, or equivalent	11.75 to 12.25
Rails for rolling	16.00 to 16.50
Relaying rails, nominal	25.00 to 26.00
Steel car axles	17.00 to 18.00
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	15.00 to 15.50
Forge fire	9.75 to 10.25
No. 1 yard wrought, long	14.50 to 15.00
Cast borings (clean)	10.25 to 10.75
Machine-shop turnings	10.25 to 10.75
Mixed borings and turnings	10.25 to 10.75
Iron and steel pipe (1 in. diam., not under 2 ft. long)	9.75 to 10.25
Stove plate	11.00 to 12.00
Locomotive grate bars	12.00 to 12.50
Malleable cast (railroad)	14.00 to 15.00
Cast iron car wheels	16.00 to 16.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.50 to $18.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	16.50 to 17.00
No. 1 heavy cast, not cupola size	12.50 to 13.00
No. 2 cast (radiators, cast boilers, etc.)	14.50 to 15.00

Boston

Concessions in Buffalo Pig Iron Prices Made on Small Bookings

BOSTON, April 8.—An inquiry for 300 tons prompt shipment iron from a New Hampshire foundry, three grades of 100 tons each, is the only prospective round tonnage in the market. Otherwise prospective and current business is confined to car lots and few of them. Concessions on Buffalo pig iron prices were made the past week on small bookings. One lot of 500 tons No. 2X, prompt shipment, sold at $21.50 furnace, or $26.41 delivered in Massachusetts, while car lot business in No. 1X, prompt shipment, was done at $22. No. 2X was offered one foundry at $22 furnace, or $21.50 base. The eastern Pennsylvania price situation apparently is unchanged, the lack of business failing to offer an opportunity to shade prices if a furnace desired to so do. Nor have prices on Virginia and Alabama varied. One of the largest textile machinery manufacturers will not be in the market for iron before September, if then, and others have plenty of stock on hand for two or three months' melting. The next buying movement of iron, therefore, probably will be started by the heater and stove manufacturers. Round tonnages of foreign iron are still offered here without takers, owners being unable to get even an offer from foundries.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$26.15 to $27.15
East. Penn., sil. 1.75 to 2.25	25.65 to 26.65
Buffalo, sil. 2.25 to 2.75	26.91 to 27.41
Buffalo, sil. 1.75 to 2.25	26.41 to 26.91
Virginia, sil. 2.25 to 2.75	32.42 to 33.42
Virginia, sil. 1.75 to 2.25	31.92 to 32.92
Alabama, sil. 2.25 to 2.75	33.10
Alabama, sil. 1.75 to 2.25	32.60

Shapes and Plates.—Bids close this week on 8000 tons of structural steel for the Statler Hotel, Boston. Prices on shapes are unsettled and this tonnage will, it is intimated by fabricators, probably bring out lower prices. Plates are offered at 2.20c., f.o.b. Pittsburgh base, a new low record for this movement.

Warehouse Business.—With a larger amount of small construction under way, the movement of iron and steel out of warehouses is on the increase. Angles, channels and concrete bars are among the most active items on the list. For steel mill products, prices are maintained, although more or less price cutting on wire nails is noted. Cable chain has been advanced 35c. per 100 lb. Sheet brass, brazed tubing, sheet copper and bare copper wire, on the other hand, are ½c. per lb. lower and seamless brass tubing 1c.

Soft steel bars, $3.51½ per 100 lb. base; flats, $4.40; plain and deformed concrete bars, $3.76½; small angles, channels and tees, $3.51½; structural steel, large angles and beams, $3.61½; tire steel, $4.80 to $5.15; open-hearth spring steel, $5 to $8; crucible spring steel, $12; steel bands, $4.31½ to $5.20; hoop steel, $5.80 to $6.30; cold rolled steel, $4.35 to $4.85; toe calk steel, $6.15; heavy plates, $3.61½; light plates, $3.86½; diamond pattern plates, stock sizes, $5.90; blue annealed sheets, $4.51½; refined iron bars, $3.51½; best refined iron bars, $4.75; Wayne, $5.50; Norway rounds, $6.60; Norway squares and flats, $7.10.

Coke.—Specifications against first half contracts for April delivery of by-product foundry coke are far out of proportion with pig iron buying, an indication of expanding business in the foundry industry. It is now believed that practically all first half contract coke will be taken by melters. Both the New England Coal & Coke Co. and the Providence Gas Co. continue to quote by-product fuel at $12.50 delivered in New England.

Old Material.—Even less activity is visible in the old material market than heretofore, business being practically at a standstill. Turnings lead in activity yet aggregate sales for the week amount to only a few hundred tons, original owners not being over-anxious to sell at prevailing prices. General yard stocks are small. Because of the downward tendency of prices, dealers are in no hurry to replenish holdings. With the call for heavy melting steel stagnant, values tend lower and there is a much narrower spread between them than heretofore. Contrasted with a week ago, old material prices generally average 50c. a ton lower. Even machinery cast prices have joined in the down trend, following a protracted period of stability. The Arsenal, Watertown, Mass., offers for sale a one or two-ton Tropenas steel conveyor, 44 ft. stack, and 50 hp. motor.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$21.50 to $22.00
No. 2 machinery cast	19.50 to 20.00
Stove plates	15.50 to 16.00
Railroad malleable	19.00 to 19.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$11.00 to $11.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	10.00 to 10.50
Machine shop turnings	9.00 to 9.50
Cast iron borings, chemical	11.50 to 12.00
Cast iron borings, rolling mill	9.00 to 9.50
Blast furnace borings and turnings	9.00 to 9.50
Forged scrap and bundled skeleton	9.50 to 10.00
Shafting	15.50 to 16.00
Street car axles	15.50 to 16.00
Rails for rolling	12.50 to 13.00

Buffalo

Pig Iron Business Light—Some Shading on Finished Materials

BUFFALO, April 8.—The market is quiet, total inquiry running about 6000 tons. The Worthington Pump Corporation is seeking 1750 tons for May or June delivery. The New York Air Brake Co. has again put out its inquiry for 1500 tons of high silicon iron. Neither tonnage has yet been placed. The rest of the inquiry is for scattered lots. While business placed during the week was very light, melting throughout the district is steady and makers believe that stocks of iron are not so heavy that the foundries will not have to purchase within 30 or 40 days. One local maker has no capacity left for the second quarter, though about 10,000 tons of piled iron is available. Considerable stocks are piled throughout the district and owners of resale iron are known to have a considerable tonnage to dispose of. This and the fact that the railroad situation is easy and deliveries good contribute to the lack of zeal by the melters. Makers are endeavoring to get the $22 price and most of them are steady in their adherence to it, on small lots, though some easing has occurred on medium tonnage. Differentials are being taken where possible. One maker is asking $25.50 for 4.50 silicon foundry and $23.50 on 3.25 to 3.75 silicon.

We quote f.o.b., gross ton, Buffalo, as follows:

No. 1 foundry, sil. 2.75 to 3.25	$22.00 to $22.50
No. 2 foundry, sil. 2.25 to 2.75	21.50 to 22.00
No. 2 plain, sil. 1.75 to 2.25	21.00 to 21.50
Basic	21.50 to 22.00
Malleable	21.50 to 22.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—A good deal of hesitancy is apparent among buyers, though most of them cannot ascribe this to any particular condition and admit that the first quarter showed better business than a year ago. Sheet business is fair, but the price is weak and 3.70c. is understood to have been done on black. Mills say that there is little or no profit with sheet bars at $42.50. One lot placed during the week was for 350 tons of black sheets. Bar price is nominally 2.40c., with some shading being done. The Steel Co. of Canada is understood to have obtained the bars in an order of 3000 tons of car-building equipment in Canada. Mostly Canadian business offers little possibility for development by American mills at the present time. The agricultural implement makers are working French export material for the most part. Some shape makers profess to be getting 2.50c. on smaller lots of shapes, since jobbers are holding to that price, but business has been placed lower than this. Plates are weak and demand is very low. The price is about 2.25c. Fabricated structural business and reinforcing bar business is moving in fair volume. Erie county will place 800 tons of reinforcing mesh for roads and the Lodi bridge

will require about 100 tons. Road work in Rochester and Hornell will require a considerable tonnage of mesh and the Webster school, Rochester, placed with the Kalman Steel Co., was about 50 tons.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.30c.; galvanized steel sheets, No. 28 gage, 6.10c.; black sheets, No. 28 gage, 5c.; cold rolled round shafting, 4.45c.

Old Material.—The market continued to sag the fore part of the week, though a trifle better feeling was noticeable toward the end. Mills are endeavoring to reduce stockpiles and are only passively interested in the market. Prices are almost all nominal. Mills are apparently waiting for new business to show up substantially before doing any new buying. Operation has been slightly reduced and one mill has requested that shipments be held up. There has been some Canadian demand for No. 1 machine cast, but dealers there do not want to pay above $18.50 to $19 and this is not attractive to American dealers. Heavy melting steel has slumped off to $16.50 to $17. Recent railroad lists brought around $17, it is said, a price higher than mills are offering today.

We quote f.o.b., gross ton, Buffalo, as follows:

Heavy melting steel	$16.50 to $17.00
Low phos., 0.04 and under	20.00 to 21.00
No. 1 railroad wrought	14.50 to 15.00
Car wheels	18.00 to 18.50
Machine shop turnings	11.50 to 12.00
Cast iron borings	12.50 to 13.00
No. 1 busheling	15.00 to 15.50
Stove plate	16.00 to 16.50
Grate bars	16.00 to 16.50
Bundled sheet stampings	10.00 to 11.00
Hydraulic compressed	15.00 to 15.50
Railroad malleable	19.00 to 19.50
No. 1 machinery cast	19.00 to 19.50

Birmingham

Pig Iron Production Heavy, Selling Light and Prices Weak

BIRMINGHAM, ALA., April 8.—Pig iron production in Alabama continues as active as for the past several months, delivery is equal to the make; the demand is slow, quotations weak. With considerable tonnage yet to be delivered on old contracts and home melt showing some improvement, furnace interests in this district are not in the least apprehensive as to the market. No effort through concession in price is being made to get business. The quotations range from $22.50 per ton, No. 2 foundry, to $23.50 per ton, with $23 as the average price. The Woodward Iron Co. and the Sloss-Sheffield Steel & Iron Co., each with four blast furnaces in operation, are piling no iron, the latter taking a little from surplus stock. The local consumers of pig iron are asking steady delivery and authoritative statement comes from one line of melters that a demand is starting which promises to test delivery capacity. The activity is expected to continue for several months. The Woodward Iron Co. last month broke its production record, getting with four blast furnaces in March 43,043 tons of iron.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

No. 1 foundry, 2.25 to 2.75 sil.	$23.50 to $24.00
No. 2 foundry, 1.75 to 2.25 sil.	22.50 to 23.50
Basic	22.50 to 23.00
Charcoal, warm blast	32.00 to 33.00

Foundries and Rolling Mills.—Foundries and rolling mills are receiving more business and brighter prospects are noticeable. Hardie-Tynes Mfg. Co. has just completed a 50,000-lb. casting for the Alabama Power Co., the work on this casting being interesting on account of its extreme size and also because of the fact that no patterns were used, the entire work in the foundry being accomplished through the use of cores. The Birmingham Machine & Foundry Co. has received some sugar machinery work for Cuba. More sugar machinery has been built in Birmingham in recent years than elsewhere. The Southern Steel & Rolling Mills Co., having a small plant using rail steel rails altogether, has received a contract for 550 tons of steel concrete bars from a Louisiana school project and is low bidder on 2000 tons for bars to be delivered to a Texas point for an automobile assembling plant.

Cast-Iron Pipe.—Municipal buyers are appearing in the cast-iron pipe trade and Birmingham made pressure pipe is being sought in quantity. Indications are that inquiry will be heavy for the next several weeks. The several pressure pipe plants in Alabama are operating almost to capacity. The soil pipe trade is not so active, being between seasons, but there are many orders in hand and several of the larger shops are operating to capacity and turning out a large quantity of pipe. No little pressure and soil pipe and fittings from Birmingham has been moving to California points. American Cast Iron Pipe Co. makes known the following contracts: Quincy, Ill., 261 tons; Milwaukee, Wis., 1200 tons; Rome, Ga., 240 tons; Abilene, Tex., 106 tons; Price, Utah, 250 tons; St. James, Mo., 125 tons; River Grove, Ill., 1350 tons.

We quote class B, 4-in. water, $52 to $53; 6-in. and over, $48 to $49; class A, $5 higher; standard soil pipe, $60; heavy gage, $45; standard fittings, $110.

Coke.—Production of coke in the Birmingham district continues undisturbed and with the exception of one by-product plant there is very little coke going to the yards. Independent coke companies announce steady demand for their product, small-lot orders being received and quick delivery possible. The quotations remain steady, ranging from $5 to $5.50 for furnace coke and from $5.50 to $6.50 for foundry coke. Woodward Iron Co. reported a month's record in March at its by-product plant, 71,432 tons. All small foundries are buying in small lots. Coke accumulated at Fairfield, North Birmingham and elsewhere gives no concern.

Scrap.—Delivery on old contracts, a few sales, small lots and inquiries as to condition of stock describe the old material market. The quotations have changed none recently. The railroads offer some scrap and the regular dealers are buying it at the same rate that they are shipping.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	14.00 to 14.50
Railroad wrought	12.00 to 13.00
Steel axles	19.00 to 20.00
Iron axles	21.00 to 21.50
Steel rails	12.00 to 13.00
No. 1 cast	20.00 to 20.50
Tram car wheels	17.00 to 18.00
Car wheels	16.00 to 17.00
Stove plate	15.50 to 16.50
Machine shop turnings	7.00 to 9.00
Cast iron borings	9.00 to 10.00
Rails for rolling	16.50 to 17.00

San Francisco

Foreign Pig Iron Coming in Freely at Prices Below Those of Domestic Product

SAN FRANCISCO, April 7.—Business conditions continue favorable and while both mills and foundries report a fair volume of trade with indications for steady activity through the spring and summer months, they are not working up to capacity. There is also plainly evident an undercurrent of feeling that the development of business progress has not assumed as large proportions as many of the optimists of a month or six weeks ago predicted. However this may turn out, the conservative element in the local branches of the iron and steel industries express themselves as well satisfied, not only with present activities but with prospects for the future. Some liberal arrivals of European pig iron and finished products, including a considerable quantity of heavy structural shapes, are new market features, which, some say, have had a disquieting influence upon business. Foreign exchange is particularly favorable for bringing this material here and some exceptionally low figures are being quoted. Additional tonnage is on the way and the imports of domestic iron will undoubtedly decrease. Both mills and foundries

are booking a good volume of new orders, in fact, sufficient to keep them busy for some months. Efforts to maintain prices meet with a moderate measure of success but shading of asking figures is much more common than usual because of the keen competition of foreign products.

Pig Iron.—Business remains about the same as for the last few weeks, with buyers confining themselves mostly to small lots. The sales show a very general distribution over the State, so the trade is regarded as satisfactory in that it is not limited to certain localities as was the case for a time last summer. Domestic iron is still quoted from $33 to $34 per ton, but these figures have been sharply shaded by foreign iron, which is coming to hand more freely than for a long time past and as geographical conditions make this a favorable market these importations are bound to increase rather than otherwise. Desirable grades of iron have come from Europe, China and some small lots from India. This iron is quoted from $26 to $30 per ton, this largely depending on grade. Sales have been steady and some tonnage now on the way is already placed.

Coke.—Buyers show less activity than earlier in the year, but sales are deemed fair for this time. Consumers bought liberally some weeks ago, so a slight reaction was to be expected. Prices are still quoted at from $20 to $21 for desirable foreign grades, although one buyer says he can obtain a round lot at a trifle less than the minimum figure. Some tonnage is on the way with two cargoes expected to arrive before the end of the month.

Finished Iron and Steel.—While trade cannot be called active, it is far from dull. Prices are reported more than usually sensitive and there has been some very close shading done in some instances in order to obtain the business. Mills quote steel rods for reinforcing at $3.50 to $3.65 in carload lots with sales of small parcels up to $3.90. Merchant bars meet with a good demand at from $2.85 to $2.90. Structural materials which include angles, channels and other items are in steady demand with $2.85 to $2.90 held firmly as the price on carload lots. While there has been considerable finished material arriving from Europe, the great bulk of these imports has been heavy structural shapes. This is laid down here at $2.10 to $2.15 duty paid, net, to buyers. These exceptionally low rates naturally attract trade and large quantities are being used. For some of the other finished materials such as wire, nails, rivets, bolts and nuts, prices are a trifle firmer with the demand showing a moderate increase.

Old Material.—Dullness seems to have complete control of this branch of the iron industry and considering the present volume of foundry operations, sellers are surprised that buyers can satisfy their requirements with the small quantities of old material which have been placed among consumers during the last few weeks. Prices remain unchanged at $13.50 to $14. Supplies of heavy melting steel are said to be very moderate, but unless the demand increases materially, there will be enough to meet requirements at the current figures. The lower grades of scrap are selling slowly, with the prices favoring buyers.

"Distribution and Utilization of the Product of the Public Schools" is the title of a 23-page report of the committee on relations with public schools of the American Management Association, 20 Vesey Street, New York. Carl S. Coler, Westinghouse Electric & Mfg. Co., East Pittsburgh, is chairman of the committee, which includes also T. E. Van Meter, Deere & Co., East Moline, Ill. The report itself is made in six pages, the remaining pages being given to abstracts relating to the subject and to discussion of the report.

In March the Trumbull Steel Co. shipped 35,000 tons of finished steel products from its plants in Warren and Leavittsburg, bringing total shipments for the first quarter to approximately 100,000 tons. March shipments were somewhat retarded by holdup orders issued by consumers, involving several thousand tons.

Cincinnati

Pig Iron Market Dull and Prices Weak—Scrap Again Declines

CINCINNATI, April 8.—The pig iron market continues exceptionally dull, with prices soft. There has been little inquiry to test the market, but on what orders are being placed concessions of 50c. per ton are being secured. On southern Ohio irons the market today is $23 to $23.50, the latter price being quoted on carload lots. In the South, resale iron can be had at $22, Birmingham, but furnaces are apparently holding to $22.50. Sales last week were light, one melter taking 100 tons of Northern and 300 tons of resale Southern, while another bought 200 tons of off grade foundry. Inquiries before the market include 500 tons of basic, 600 tons of foundry grades, and several 100-ton lots of both Northern and Southern irons. There is no activity in silveries or Bessemer irons, and prices are nominally unchanged. Shipments are holding up well, no requests for holdups having been received by furnaces in this district.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$26.55
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	27.05
Ohio silvery, 8 per cent	35.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	25.27
Basic Northern	24.77
Malleable	25.27

Sheets.—Reports are current of hold-ups on automobile body sheets, but there has been little of this in blue annealed, black and galvanized. Prices are weak, and 2.85c., 3.70c. and 4.75c. to 4.90c. now represent the market, with business confined to carload orders for fill-in purposes.

Structural Activity.—A number of small inquiries appeared, but no awards of importance were made. A number of fairly large tonnages are expected to be inquired for within the next few weeks, including the power plant of the Union Gas & Electric Co., Cincinnati, which will require 5200 tons.

Reinforcing Bars.—A number of projects on which bids were taken this week have not been awarded. Inquiry is fairly heavy. Prices are unchanged, 2.10c. to 2.30c. being the quotations on rail steel bars, with 2.30c. to 2.40c. the asking price for new billet stock.

Warehouse Business.—Local jobbers report a fair business for the past week, though this is nothing unusual for the first week of a new month. Fine weather is expected to develop a lot of business in sheets and wire products. Prices are unchanged, and are being fairly well held.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.25c.; cold-rolled flats, squares and hexagons, 4.25c.; open-hearth spring steel, 5c. to 6c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, 4.80c.; No. 28 galvanized sheets, 5.85c.; No. 9 annealed wire, $3.60; common wire nails, $3.50 per keg base; cement coated nails; $3.00 per keg.

Finished Materials.—Orders for finished materials continue of the hand-to-mouth variety. They were more numerous last week than for the week previous, but sizable tonnages were lacking. The Big Four Railroad took bids on its second quarter requirements of steel, including plates, shapes, sheets, axles, and reinforcing bars. The low bid on plates was 2.34½c., delivered Cleveland, or equivalent to approximately 2.15c., Pittsburgh, after deducting the freight rate from Pittsburgh to Cleveland. On bars, 2.35c., Pittsburgh, was the lowest quotation. It is said that on an attractive tonnage of plates 2.30c. can be done, and a similar price on bars and shapes would also be made by a number of mills. There is little interest being manifested in wire products, although a southern Ohio mill is reported to have booked orders for 30 carloads of nails within the past week. A few days of warm weather will loosen up the demand for nails and wire products, in the opinion of those in the trade. No change is noted in prices, the general quotation being $3 per keg, f.o.b. mill, for wire nails, with Pittsburgh district mills equal-

izing Ironton rail rates to Cincinnati. There has been little activity in bolts and nuts, and prices are fairly firm.

Coke.—The coke market is very quiet. Some melters are holding up shipments until some of their surplus stock is used up. Prices are soft, but in the absence of any sales of consequence last week's quotations stand.

Connellsville furnace, $3.75; foundry, $4.75; New River foundry, $10.50; Wise County furnace, $4; foundry, $5; by-product foundry, $8, Connellsville basis.

Old Material.—There has been a little demand for cast grades of scrap, but in the steel grades the market is very dull. Prices have again declined from 50c. to $1 per ton on practically all items. Inquiry is very light.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$13.00 to	$13.50
Scrap rails for melting	12.50 to	13.00
Short rails	17.50 to	18.00
Relaying rails	28.50 to	29.00
Rails for rolling	14.50 to	15.00
Old car wheels	13.00 to	13.50
No. 1 locomotive tires	14.00 to	14.50
Railroad malleable	15.50 to	16.00
Agricultural malleable	14.50 to	15.00
Loose sheet clippings	8.50 to	9.00
Champion bundled sheets	10.50 to	11.00
Per Net Ton		
Cast iron borings	9.00 to	9.50
Machine shop turnings	8.00 to	8.50
No. 1 machinery cast	18.00 to	18.50
No. 1 railroad cast	14.50 to	15.00
Iron axles	21.00 to	21.50
No. 1 railroad wrought	10.50 to	11.00
Pipes and flues	7.50 to	8.00
No. 1 busheling	9.00 to	9.50
Mixed busheling	6.50 to	7.50
Burnt cast	10.50 to	11.00
Stove plate	10.50 to	11.00
Brake shoes	11.50 to	12.00

St. Louis

Second Quarter Opens with Very Little Buying of Pig Iron—Furnace Blown In

ST. LOUIS, April 8.—The opening of the second quarter passed by almost unnoticed as far as buying of pig iron was concerned. Most of the melters in the St. Louis industrial district are fairly well taken care of for the present, and they are awaiting devolopments in the production and price situation of pig iron before further commitments. The only sale of consequence during the week was one of 350 tons of car wheel iron made by the St. Louis Coke & Iron Co., which also sold 250 tons of foundry iron in carload lots. The St. Louis maker blew in the furnace of the Mississippi Valley Iron Co. last Tuesday. The Granite City furnace is producing 400 tons daily, as is the one on this side of the river. Northern iron is nominally $24 to $24.50, Chicago, and Southern iron $22 to $23, Birmingham, but not enough business is being placed to test the market.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$26.16 to	$26.66
Northern malleable, sil. 1.75 to 2.25	26.16 to	26.66
Basic	26.16 to	26.66
Southern fdy., sil. 1.75 to 2.25 (rail)	27.17 to	28.17
Southern foundry, sil. 1.75 to 2.25 (rail and water)	26.28 to	27.28
Granite City iron, sil. 1.75 to 2.25.	26.31 to	26.81

Coke.—The St. Louis Coke & Iron Co., which last week reduced the price of its foundry coke from $12.50, this week advanced the price to $12, f.o.b. oven. This puts it on a par with the Warren by-product coke. The first of the contracts for domestic coke was made by the Granite City producer, being for 500 tons for delivery in June, July and August.

Finished Iron and Steel.—The St. Louis Southwestern Railway has asked for prices on structural steel for repairs on 332 50-ton service cars. No other railroad inquiries are pending. Business in other lines is extremely dull.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled, one pass, 4.85c.; cold drawn rounds, shafting and screw stock, 4.70c.; structural rivets, 4.15c.; boiler rivets, 4.35c.; tank rivets, ⅞-in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, squares or hexagons blank, $2.50, and tapped, $2.50 off list.

Old Material.—The market for old material continues weak with further declines in prices. Consumers are buying only from hand to mouth. Dealers are buying only such material as they require to fill existing contracts. New railroad lists follow: St. Louis & San Francisco, 700 tons; St. Louis Southwestern, 2200 tons; Mobile & Ohio, 2000 tons; Union Pacific, 1200 tons; Chicago & Eastern Illinois, 725 tons; Chicago & Western Indiana, 300 tons; Atchison, Topeka & Santa Fe, 2700 tons; Pullman Co., 850 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$15.00 to	$15.50
Rails for rolling	16.25 to	16.75
Steel rails less than 3 ft.	19.00 to	19.50
Relaying rails, 60 lb. and under	25.00 to	26.00
Relaying rails, 70 lb. and over	32.50 to	33.50
Cast iron car wheels	18.50 to	19.00
Heavy melting steel	15.00 to	15.50
Heavy shoveling steel	15.00 to	15.50
Frogs, switches and guards cut apart	16.00 to	16.50
Railroad springs	17.00 to	17.50
Heavy axles and tire turnings	13.00 to	13.50
No. 1 locomotive tires	15.75 to	16.25
Per Net Ton		
Steel angle bars	15.50 to	16.00
Steel car axles	18.00 to	18.50
Iron car axles	27.00 to	27.50
Wrought iron bars and transoms	19.00 to	19.50
No. 1 railroad wrought	12.50 to	13.00
No. 2 railroad wrought	13.50 to	14.00
Cast iron borings	11.00 to	11.50
No. 1 busheling	13.00 to	13.50
No. 1 railroad cast	18.50 to	19.00
No. 1 machinery cast	19.00 to	19.50
Railroad malleable	16.00 to	16.50
Machine shop turnings	9.00 to	9.50
Champion bundled sheets	8.50 to	9.00

Canadian Scrap Market

TORONTO, ONT., April 7.—Trading in iron and steel scrap has shown little or no improvement during the past two weeks. In most cases melters are buying only such material as is required for immediate needs and as a result little interest is reported in the market. Melters appear to be of the opinion that scrap prices are due for a decline, while on the other hand dealers look for a stronger tendency. Steel plants are furnishing the greater part of the present demand, and the movement of heavy melting steel, turnings, etc., is being maintained at former levels. Foundry activities are still a long way below normal and although foundry operators are of the opinion that a stronger demand for their products will shortly make its appearance, they are showing no anxiety as to their future supply of raw material, but are buying scrap only in tonnages sufficient to meet present needs. Machinery cast is in fairly good demand, but stove plate and malleable scrap are quiet. Dealers are showing their confidence in future business by adding to their stock holdings, and it is now reported that both Toronto and Montreal dealers are well supplied with practically all lines of old material and no shortage is expected.

Scrap prices are firm at former levels. Dealers' buying prices are as follows:

	Gross Tons	
	Toronto	Montreal
Steel turnings	$11.00	$9.00
Machine shop turnings	10.00	8.00
Wrought pipe	9.00	11.00
Rails	14.00	13.00
No. 1 wrought scrap	12.00	13.00
Heavy melting steel	13.00	13.00
Steel axles	15.00	18.00
Axles, wrought iron	18.00	20.00
	Net Tons	
Standard car wheels	15.00	15.00
Malleable scrap	15.00	15.50
Stove plate	15.00	16.00
No. 1 machinery cast	19.00	21.00

Cleveland

Price Trend Downward—Some Suspensions of Shipments to Automobile Plants

CLEVELAND, April 8.—Consumers as a rule are carrying low stocks and the trade looks for a more active demand before the end of the month. However, the market continues to drag, with orders confined to small lots for immediate requirements and buyers insist on quick shipments. Several Detroit automobile companies have slowed down to the extent that they are holding back on shipments of considerable steel, but a number of the parts makers in Cleveland have not reduced their shipping orders. While there was no marked change in the price situation during the week, the tendency is toward further weakness. On steel bars 2.30c. appears to have become more common for desirable orders. On plates 2.35c. is the common quotation, although 2.30c. has been named in this territory and some business is still being taken at 2.40c. Further weakness has developed in the strip steel market as a result of the decreased demand from the automotive industry. Sales of wide hot-rolled strip are reported at 2.50c., although the usual price range is from 2.60c. to 2.70c. for wide strip. Narrow strip and bands range from 2.75c. to 2.90c., but hoops appear firm at the latter price, as there seems to be less disposition among mills to shade the narrow material. Inquiries in the structural field have slowed down, although a fair volume of building work is in prospect. It is reported that the McCorkle Pipe Line Co., Fort Worth, Tex., which recently sent out an inquiry for steel for a pipe line, will require 25,000 tons of plates for tanks and 60,000 tons for pipe. A new inquiry for 300 tons of plates for oil stills is pending.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 28 black sheets, 4.40c. to 4.65c.; No. 28 galvanized sheets, 5.60c. to 5.75c.; No. 10 blue annealed sheets, 3.60c. to 4c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.66c.; No. 9 annealed wire, $3.50 per 100 lb.; No. 9 galvanized wire, $3.95 per 100 lb.; common wire nails, $3.60 base per 100 lb.

Iron Ore.—Ore prices have been established for this year with a reduction of 80c. a ton from last season's prices. Complete details concerning the reduction will be found on another page. Ore shipments during March were 996,085 tons, as compared with 1,324,977 tons in March, 1923. The balance in Lake Erie docks April 1 was 6,062,589 tons, as compared with 6,625,106 tons on April 1 last year.

Pig Iron.—The demand shows but little improvement over several preceding weeks and the market has developed further weakness, which doubtless has been augmented by the 80c. a ton cut in ore prices, making a reduction of $1.60 a ton in the cost of manufacturing pig iron based on the new prices for ore. This weakness does not bear out the claim made by some that pig iron producers some time ago had discounted the reduction in ore prices, although this may be true of some furnaces. In the Valley district $22 has become the more common quotation on foundry iron, but some producers are still asking $23. Reports from Buffalo indicate that a $21 price is appearing on foundry iron. Locally the market has not been tested. Several small lot sales were made during the week by Cleveland foundries for local delivery at $24, and this is still the nominal quotation, but it is evident that when some competitive business develops, Cleveland furnaces will have to go to about $23 to shut out Valley and Buffalo competition. One lake furnace that has been holding to $24 for any delivery point has quoted $23.50 on an inquiry from western Ohio for 1000 tons of foundry and malleable iron, but lost the order, which is believed to have gone to a Valley or Buffalo furnace. Other lake furnaces are not taking as firm an attitude on the market as recently and probably will meet whatever price situation develops and name quotations that will prevent business in their territory from going to outlying districts. Inquiries include one from an Indiana foundry for 800 tons of foundry and malleable iron and two inquiries each for 500 tons of foundry iron. The Hanna Furnace Co. placed its A furnace in Detroit in blast last week. This has been out for relining.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$22.00
Northern No. 2 fdy., sil. 1.75 to 2.25	24.50
Southern fdy., sil. 1.75 to 2.25	29.00
Malleable	24.50
Ohio silvery, 8 per cent	35.52
Standard low phos., Valley furnace	29.00

Bolts, Nuts and Rivets.—Bolt and nut makers are getting a fair volume of orders, but these are for small lots, as consumers are specifying only for early requirements. While most of the makers appear to be holding firmly to 60 and 10 per cent off list for large machine bolts, a concession of 5 per cent from this price is appearing. Rivets are quiet and weak. While quotations of $2.60 and possibly lower have appeared, the leading local manufacturer is adhering to the regular $2.75 price.

Reinforcing Bars.—Considerable new work is coming out on which tonnage estimates have not yet been made. Prices are holding close to recent levels, although there is a tendency to weakness on new steel bars, which range from 2.30c. to 2.40c. Rail steel bars are unchanged at 2.10c. The Bourne-Fuller Co. has taken 400 tons for a warehouse for the Atlantic & Pacific Tea Co. in Chicago.

Sheets.—The demand is light and there have been some suspensions by the Detroit automobile companies. Prices lack strength. On black sheets quotations higher than 3.75c. by independent mills have virtually disappeared. On blue annealed sheets, shading to 2.85c. is reported with 2.90c. the common price. Galvanized sheets are unchanged at 4.90c. Automobile body sheets are firm. The 3.75c. price on tin mill black plate has become fairly common.

Warehouse Business.—The volume of warehouse orders has improved this month, and prices appear a little firmer, although some of the products are still being shaded $2 a ton for desirable orders.

Semi-Finished Steel.—With the weakness in finished material there is more talk among buyers that semi-finished steel prices must come down. Some mills need orders, but are not inclined to cut prices, as shadings would probably necessitate the revision of the second quarter contracts at the present prices. There is no new demand. Consumers are under contract and are specifying for only immediate requirements.

Coke.—The foundry coke market continues dull, with quotations unchanged at from $4.75 to $6.50 for Connellsville coke for prompt shipment.

Old Material.—Scrap prices continue a downward trend and the market is still weak. Heavy melting steel declined $1.75 a ton during the week and most other grades are down fully $1 a ton. Sales of heavy melting steel in small lots on cars have been made at $14. In the Valley district the price has declined to $17, Youngstown. No buying by mills is reported, transactions being limited to trading between dealers.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$14.00 to $14.25
Rails for rolling	15.75 to 16.00
Rails under 3 ft.	16.00 to 16.25
Low phosphorus melting	16.50 to 17.00
Cast iron borings	11.25 to 11.50
Machine shop turnings	11.25 to 11.50
Mixed borings and short turnings	11.25 to 11.50
Compressed sheet steel	12.75 to 13.00
Railroad wrought	11.00 to 11.50
Railroad malleable	17.50 to 17.75
Light bundled sheet stampings	10.00 to 11.00
Steel axle turnings	12.50 to 12.75
No. 1 cast	19.00 to 19.50
No. 1 busheling	9.50 to 9.75
Drop forge flashings	9.50 to 9.75
Railroad grate bars	14.00 to 14.25
Stove plate	14.00 to 14.25
Pipes and flues	8.50 to 9.00

Philadelphia

Spread of $4 a Ton in Bids on 37,500 Tons of Plates, Shapes and Bars

PHILADELPHIA, April 8.—Opening of bids by the Chesapeake & Ohio Railroad on 37,500 tons of plates, shapes and bars for the building of 3000 freight cars has furnished the chief topic of interest in the Philadelphia steel trade. Eastern mills put in bids as low as 2.15c., Pittsburgh, on the plates and shapes, while two leading Pittsburgh mills bid 2.35c., Pittsburgh. A possible explanation for the unexpectedly high quotations of the Pittsburgh mills is that an effort is being made by these leading interests to reestablish the market for the heavier products at the levels which existed about the first of the year, namely, 2.40c. for bars and 2.50c. for plates and shapes. The outcome of the effort of the Chesapeake & Ohio to buy the material for cars to be built by regular car builders is still in doubt, particularly so, as some of the largest car companies have declined to quote except on the complete cars, including material. The 2.15c. quotations of Eastern mills were not surprising to the trade here, in view of the increasing competition for business.

Another development of the week was the arrival here of several hundred tons of structural shapes from Germany, a part of which was consigned to a local fabricator and the remainder to a local importer. The latter is offering carload lots at about 2.30c. per lb., f.o.b. cars, Philadelphia, which is roughly $6 a ton below prices quoted by domestic mills with freight to Philadelphia added. Higher prices for steel abroad, plus the recovery of the French franc, now make it doubtful whether much more steel will be imported beyond that already contracted for. The high tariff on plates makes it almost impossible to import that commodity at a profit and the same holds true of light rails. Delivered prices here on light rails were about on a parity with domestic prices f.o.b. mill, making the margin, if any, too little for importers to take the risks involved.

All lines of trade are extremely quiet. Even the hand-to-mouth buying of last month is not coming in as large a volume.

Pig Iron.—The pig iron market is the dullest it has been in many months. There is a scarcity even of the carload orders which ordinarily are to be had in fair number at all times. Prices are not strong, but are untested. Nominally foundry iron may be quoted at $22, base, furnace, but some furnaces will not go below $22.50 or $23 on the small lots now being bought. Furnace stocks are being reduced very slightly, there still being large stocks in eastern Pennsylvania. Temple furnace has gone out of blast and the Replogle furnace, Wharton, N. J., will probably be blown out this week. Domestic low phosphorus iron, copper free, has been sold at $26, furnace. A 1000-ton shipment of foundry iron was received here last week from Scotland.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$22.76 to $23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.26 to 24.13
East. Pa. No. 1X	23.76 to 24.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	30.17 to 31.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.67 to 31.67
Basic delivery eastern Pa.	21.50 to 22.50
Gray forge	22.00 to 23.00
Malleable	23.75 to 24.25
Standard low phos. (f.o.b. furnace)	26.00 to 27.00
Copper bearing low phos. (f.o.b. furnace)	26.00 to 27.00

Ferroalloys.—Domestic ferromanganese is being produced in large tonnage in the East, three furnaces of the Lavino Furnace Co. now being active. Very little foreign alloy is being sold. Prices for both foreign and domestic remain at $107.50, seaboard or furnace. One hundred tons of ferromanganese and 50 tons of spiegeleisen came in last week from England.

Billets.—Reports of $38 on rerolling billets and $42 on forging billets are heard, but the usual quotations are $40 for the former and $45 for the latter, Pittsburgh basis.

Plates.—Miscellaneous plate business is now being taken by some mills at 2.20c., Pittsburgh, for carload lots or larger, but the 2.15c. quotations of some Eastern mills on the 23,000 tons inquired for by the Chesapeake & Ohio indicates what might be done on very large lots. Some mills are getting 2.25c. for small lots, and for less than carloads 2.30c. is usually obtained. While complaining that prices are getting too low for profit, the mills seemingly intend to continue running if they can obtain enough orders and price competition is growing keener. The Sun Shipbuilding Co. is figuring on 50 steel drums for the Standard Oil Co. and is inquiring for 2500 tons of plates, some of which are to be 2 in. thick and more than 100 in. wide. An Eastern mill will roll about 600 tons of plates for a passenger steamer to be built by the Pusey & Jones Co., Wilmington, Del., for the Norfolk & Washington Line. Operations of Eastern mills continue at about 40 to 50 per cent.

Structural Material.—Further weakness in prices of shapes is noted. Ordinary lots are being sold by some mills at 2.25c. to 2.30c., Pittsburgh, while in a few instances 2.20c. has been quoted. There were 13,000 tons of shapes in the Chesapeake & Ohio inquiry, some mills bidding 2.15c., Pittsburgh. The effect of the sale of small lots of German beams at 2.30c., f.o.b. cars Philadelphia, is yet to be measured. About 150 tons of this material has been sold and other lots to arrive within the next month or two will be offered as soon as they are afloat. There is comparatively little local fabricating work pending.

Bars.—Demand for steel bars has been ebbing slowly in the past two or three weeks and is now considerably less in volume than the mills enjoyed during the first quarter. Some mills in the Pittsburgh district are in need of bar tonnage, also shapes, although they have fairly good backlogs of plates because of the large car orders of the past few months. An effort to reestablish a bar price of 2.40c., Pittsburgh, which is being made by some mills, will be watched by their competitors and consumers with interest. Bars have been sold at as low as 2.25c., Pittsburgh, but 2.30c. is a more common quotation, with 2.35c. being quoted on very small lots. Bar iron is quiet and prices are nominally 2.20c. and 2.25c., Pittsburgh.

Sheets.—In common with other steel products sheets are not being bought as freely as in first quarter. Prices continue about in the relation that has existed since the first of the year. Most of the larger mills are adhering to the quotations of the American Sheet & Tin Plate Co., except in very special instances, while a few small mills, needing tonnage, are offering concessions of $2 or $3 a ton. A majority of the sales of blue annealed sheets by an Eastern mill are at 3c., Pittsburgh, notwithstanding the fact that a few competitive mills have quoted 2.90c. rather frequently.

Warehouse Business.—There is now considerable irregularity in prices quoted by local warehouses. While nominally prices remain as quoted below, nearly all jobbers are giving concessions when necessary, being forced to do so by the raggedness of mill prices, particularly in plates, shapes, bars and sheets. For local delivery we quote as follows:

Soft steel bars and small shapes, 3.47c.; iron bars (except bands), 3.47c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.75c.; tank steel plates, ⅜ in., 3.82c.; blue annealed steel sheets, No. 10 gage, 4.10c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.57c.; structural shapes, 3.57c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.27c.; narrower than 1 in., all gages, 4.77c.; steel bands, No. 12 gage to ⅛-in., inclusive, 4.27c.; rails, 3.47c.; tool steel, 8.50c.; Norway iron, 7c.

Ore.—Ore receipts last week included 7772 tons of iron ore from Sweden and 1029 tons of manganese ore from West Africa.

Old Material.—An Eastern steel company last week bought about 12,000 tons of heavy melting steel at $15.50, delivered. Other sales have been made at $16 and at $16.50, hence we quote the market at $15.50 to $16.50. All other products are weak and generally at least 50c. a ton below those quoted a week ago. There has been a revival of interest in the purchasing of scrap for shipment abroad. A few months ago, there was considerable inquiry from European countries, but at that time prices here were too high to permit consummation of business. It is believed now that transactions can be carried through and efforts are being put forth in that direction. Steel scrap, amounting to more than 3000 tons, received from England recently, as reported in this column in the April 3 issue, was chrome nickel steel scrap, some of which was sold to an Ohio alloy steel company at $20.25, Philadelphia. Another lot of scrap, 983 tons, was received here last week from Holland.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$15.50 to $16.50
Scrap rails	15.50 to 16.50
Steel rails for rolling	18.00 to 19.00
No. 1 low phos., heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	20.00 to 20.50
Cast-iron car wheels	17.50 to 18.00
Rolled steel wheels	20.00 to 20.50
No. 1 railroad wrought	18.50 to 19.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.00 to 14.50
Bundled sheets (for steel works)	13.50 to 14.00
Mixed borings and turnings (for blast furnace use)	13.50 to 14.00
Machine shop turnings (for steel works use)	14.00
Machine shop turnings (for rolling mill use)	14.00 to 14.50
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mills)	14.00 to 14.50
Cast borings (for chemical plants)	17.00 to 18.00
No. 1 cast	18.00 to 18.50
Heavy breakable cast (for steel plants)	16.00
Railroad grate bars	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Railroad malleable	17.00 to 17.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.00
Shafting	21.00 to 22.00
Steel axles	20.00 to 21.00

President Campbell Blames Politics for Lull in Business

Returning to his desk at the Youngstown Sheet & Tube Co., Youngstown, after a six weeks' stay in California, President James A. Campbell points out that the current lull in business, affecting the steel industry, is due entirely to political rather than economic causes, and predicts return of normal business conditions by July 1.

In addition to expressing confidence as to the business outlook for the remainder of the year, Mr. Campbell also voices approval of the Government naval oil reserve leases in California to the Doheny interests, and declares the public to be the recipient of benefits as a result of these leases.

Referring to the business of the Sheet & Tube company, Mr. Campbell states—"We are receiving fair orders every day. They are not up to the capacity mark, but are better than the present rate of operations in several departments. We have a very comfortable backlog."

Mr. Campbell states the Sheet & Tube company has acquired controlling interest in six large plumbing supply stores in the leading cities of the Pacific Coast and that they are doing an excellent business. The company's pipe warehouses in Los Angeles carry $3,000,000 worth of stock.

While in California, Mr. Campbell completed the unification and reorganization of the sales forces of the Sheet & Tube company and the Steel & Tube Co. of America, on the Pacific Coast.

"Conductivity and Specific Heat of Refractories at High Temperatures" is the title of a mimeographed pamphlet, Serial No. 2564, of the Bureau of Mines, by Mayo D. Hersey and Edward W. Butzler of the Pittsburgh experiment station.

DELAY IS FAVORED

Traffic Managers of Steel Companies Not Favorable to Enforcement of Rate Clause in Jones Act

PITTSBURGH, April 7.—It is the opinion of traffic managers of independent steel companies in this district that the proposed enforcement of that section of the Jones Merchant Marine act, which would entail the granting by the railroads of preferential rates on imports and exports carried in American ships, would result in confusion and probably mean a curtailment of export steel business if the section is to become effective, as proposed on May 20 next. The plan might work out satisfactorily if delayed sufficiently to permit a thorough investigation into the entire situation, it is declared, so that American shipping might know exactly the conditions it would have to meet and overcome in the direction of rates of foreign lines. [The present status of the act is explained on page 1088 of this issue.]

Just now, rates of foreign lines are very much out of line with those of American steamship companies, because vessels sailing under flags of other nations are operated under less restrictive conditions as to crews and wages than are the American boats and, furthermore, there is the additional help to foreign shipowners in the shape of governmental ship subsidies. It is pointed out that all of the steel that was shipped from this country in connection with the demands created by the Japanese earthquake went out in Japanese boats, this partly because of lower rates on these ships. It is said that Japanese vessel captains receive about $100 a month and Japanese seamen about $7.50 a month, as against $350 a month for American captains and $75 a month for American seamen. Under the provisions of the LaFollette act, American shipowners must also maintain larger crews than are demanded on foreign ships.

Foreign materials are coming to this country at rates that are so low as to suggest that they are being carried as ballast on the outgoing trip, because a good rate is obtained on the return trip. English and German boats are carrying steel to Pacific Coast points as low as $6 a ton, this rate being possible, not only because of the lower operating charges of foreign vessels, as compared with the American, but because fruits and other products of the Pacific Coast are carried back at remunerative rates. It is suggested as a remedy for that situation that the imposition of an export tax on supplies for foreign consumption might help to correct the situation, and a precedent for such action is found in the tax on shipments of rubber from the British possessions.

The new provision is not applicable from all ports, Detroit for example being exempt. Shipments from that city can continue to be made in foreign bottoms by way of Montreal or Quebec. In general, steel company traffic officials are hoping that the enforcement of this section of the act will be deferred for at least another year. In that time it will be possible to look into the situation from all angles and determine the right course of action. It is said that no very informative data are available to American shipowners to guide them in meeting foreign competition in either the Atlantic or Pacific trade, and the only practical method of finding out would be by a series of test shipments to various parts of the world.

Railroad managers are discussing rates and how to handle the traffic that is to be given the preferential rates, but as yet have arrived at nothing definite. Present preferential rail rates on export shipments expire May 1, unless, in the meanwhile, it is decided to defer application of Section 28 of the Jones act.

Contract to furnish and erect the steel work for the Belmont Avenue viaduct in Youngstown, Ohio, has been awarded the McClintic-Marshall Co., Pittsburgh, which submitted a bid of $104,797.50, the second lowest of four.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.30c. to 2.50c.

Structural Materials

Beams, channels, etc., base, per lb.....2.30c. to 2.50c.
Sheet piling .....2.45c. to 2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.30c. to 2.40c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.40c.
Refined iron bars, base, per lb.....3.10c to 3.15c.
Double refined iron bars, base, per lb.....4.75c.
Stay bolt iron bars, base, per lb.....7.75c. to 8c.

Hot-Rolled Flats

Hoops, base, per lb.....2.90c. to 3.00c.
Bands, base, per lb.....2.90c. to 3.00c.
Strips, base, per lb.....2.75c. to 3.00c.

Cold-Finished Steel

Bars and shafting, base, per lb.....3c.
Bars and shafting, l.c.l., per lb.....3.25c.
Bars, S. A. E. Series, No. 2100.....4.75c.
Bars, S. A. E. Series, No. 2300.....6.25c.
Bars, S. A. E. Series, No. 3100.....5.25c.
Strips, base, per lb.....4.75c.

Wire Products

(To jobbers in car lots)

Nails, base, per keg.....$3.00
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....$2.75
Annealed fence wire, base, per 100 lb..... 2.90
Spring wire, base, per 100 lb..... 3.70
Galvanized wire No. 9, base, per 100 lb..... 3.35
Galvanized barbed, base, per 100 lb..... 3.80
Galvanized staples, base, per keg..... 3.80
Painted barbed wire, base, per 100 lb..... 3.45
Polished staples, base, per keg..... 3.45
Cement coated nails, base, per count keg.....$2.50 to 2.60
Bale ties, carloads to jobbers.....75 and 2½ per cent off list
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads,
60, 10 and 10 per cent off list
Machine bolts, all sizes, cut threads.60 and 10 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.60 and 10 per cent off list
Carriage bolts, cut threads, all sizes,
50, 10 and 10 per cent off list
Lag bolts .....65 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.,
50 and 10 per cent off list
Larger and longer sizes.....50 and 10 per cent off list
Hot pressed squares or hex. nuts, blank.....4.50c. off list
Hot pressed nuts, tapped.....4.50c. off list
C.p.c. and t. square or hex. nuts, blank.....4c. to 4.25c.
C.p.c. and t. square or hex. nuts, tapped.....4c. to 4.25c.
Semi-finished hex. nuts:
⅝ in. and smaller, U. S. S.....80 and 5 per cent off list
⅝ in. and larger, U. S. S.....75 and 5 per cent off list
Small sizes, S. A. E.....80, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 5 per cent off list
Bolt ends with cold pressed nuts.....50 and 5 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
50 to 55 and 5 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
65 and 5 to 70 and 10 per cent off list
Washers .....5c. to 5.25c. off list

Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅞-in.	$13.25	$13.50
5/16-in.	4.90	4.90	15/16-in.	16.25	16.50
⅜-in.	5.90	6.25	1-in.	22.50	23.00
7/16-in.	7.50	8.50	1⅛-in.	34.00	34.00
½-in.	9.75	10.00	1-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

Milled hex. head cap screws.....75, 10 and 5 per cent off list
Milled standard set screws, case hardened,
75, 10 and 5 per cent off list
Milled headless set screws, cut thread,
75, 10 and 5 per cent off list
Upset hex. head cap screws, U. S. S. thread,
80, 10 and 10 per cent off list
Upset hex. head cap screws, S. A. E. thread,
80, 10 and 10 per cent off list
Milled studs .....65 and 10 per cent of list

Rivets

Large structural and ship rivets, base, per 100 lb.$2.65 to $2.75
Small rivets .....70 and 10 per cent off list

Track Equipment

Spikes, ⅝ in. and larger base, per 100 lb..... $3.00
Spikes, ½ in., 7/16 in. and ⅜ in., per 100 lb.....$3.25 to 3.50
Spikes, 7/16 in..... 3.25 to 3.50
Spikes, boat and barge, base, per 100 lb..... 3.25 to 3.50
Track bolts, ¾ in. and larger, base, per 100 lb.. 4.00 to 4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 4.50 to 5.00
Tie plates, per 100 lb..... 2.60
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+19	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	55	3 and 3¼ in.	36
1¼ and 1½ in.	47	3½ and 3¾ in.	37
1¾ in.	31	4 in.	41
2 and 2¼ in.	22	4½ in. and 5 in.	33
2½ and 2¾ in.	32		

Hot Rolled			
3 and 3¼ in.	38	4 in.	43
3½ in. and 3¾ in.	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....85 per cent off list
Carbon 0.30 to 0.40, base.....83 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2¼-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	17	5⅝-in. O.D. 9 gage	55
2¼-in. O.D. 11 gage	18	5½-in. O.D. 9 gage	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C.	$14.90
8-lb. coating I. C.	11.30	25-lb. coating I. C.	16.20
12-lb. coating I. C.	12.70	30-lb. coating I. C.	17.35
15-lb. coating I. C.	13.95	35-lb. coating I. C.	18.35
		40-lb. coating I. C.	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.85c. to 3c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.75c. to 3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....5.35c.

Galvanized

No. 28 (base), per lb.....4.90c. to 5c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	11.00c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.75 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$107.50
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid	107.50
Ferrosilicon, 50 per cent, delivered	75.00
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$38.00 to $40.00
Spiegeleisen, domestic, 16 to 19 per cent	37 to 38.00

Ferrosilicon, Bessemer, 10 per cent, $41.50; 11 per cent, $44; 12 per cent, $46.50; 14 to 16 per cent, (electric furnace) $40.00.

Silvery iron 5 per cent, $29.00; 6 per cent, $30.00; 7 per cent, $31.00; 8 per cent, $32.50; 9 per cent, $34.50; 10 per cent, $36.50; 11 per cent, $39.00; 12 per cent, $41.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$19.00 to $22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	22.00 to 23.50

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$42.00 to $45.00	$37.00 to $42.00
Maryland	47.00	42.00
Ohio	42.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00
Silica Brick:		
Pennsylvania		38.00 to 40.00
Chicago		49.00
Birmingham		50.00
Ground silica clay, per net ton		8.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		47.00

Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$40.00
Rolling billets, 2-in. and under	40.00
Forging billets, ordinary carbons	45.00
Sheet bars, Bessemer	42.50
Sheet bars, open-hearth	42.50
Slabs	40.00
Wire rods, common soft, base, No. 5 to ⅜-in.	51.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2.30c.
Skelp, sheared, per lb.	2.30c.
Skelp, universal, per lb.	2.30c.

Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb.	2c.
Rails, light, rerolled, base, per lb.	1.85c. to 1.90c.
Spikes, ⅝-in. and larger, base, per 100 lb.	$3.00
Spikes, ½-in. and smaller, base, per 100 lb.	$3.25 to 3.50
Spikes, boat and barge, base, per 100 lb.	3.25 to 3.50
Track bolts, ⅝-in. and smaller, base, per 100 lb.	4.00 to 4.25
Track bolts, ¾-in. and larger, base, per 100 lb.	4.50 to 5.00
Tie plates, per 100 lb.	2.60
Angle bars, per 100 lb.	2.75
Bars, common iron, base, per lb., Chicago mill	2.40c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rail steel reinforcing, base, per lb.	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill	2.30c.
Cold finished steel bars, base, Chicago, per lb.	3c.
Ground shafting, base, per lb.	3.40c.
Cut nails, base, per keg	$3.00 to $3.15

Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100*(1½% Nickel, 10 to 20 per cent Carbon)	$3.50
2300 (3½% Nickel)	5.00
2500 (5% Nickel)	$6.50 to 7.00
3100 (Nickel Chromium)	4.00
3200 (Nickel Chromium)	5.75 to 6.00
3300 (Nickel Chromium)	8.00 to 8.25
3400 (Nickel Chromium)	7.00 to 7.25
5100 (Chromium Steel)	3.75
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.75 to 5.00
6100 (Chromium Vanadium spring steel)	4.50 to 4.75
9250 (Silicon Manganese spring steel)	3.75 to 4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.75
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.50 to 4.75
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analysis. On smaller than 4 x 4-in. billets the net ton bar price applies.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb.:

Philadelphia, domestic	$0.32	Buffalo	$0.265	St. Louis	$0.43
Philadelphia, export	0.235	Cleveland	0.215	Kansas City	0.735
Baltimore, domestic	0.31	Cleveland, Youngstown Comb.	0.19	Kansas City (pipe)	0.705
Baltimore, export	0.225	Detroit	0.29	St. Paul	0.60
New York, domestic	0.34	Cincinnati	0.29	Omaha	0.725
New York, export	0.255	Indianapolis	0.31	Omaha	0.705
Boston, domestic	0.365	Chicago	0.34	*Denver	1.15
Boston, export	0.255			†Denver (pipe)	1.17

*Pacific Coast	$1.15
*Pac. Coast, ship plates	1.20
Birmingham	0.58
Memphis	0.56
Jacksonville, all rail	0.70
Jacksonville, rail and water	0.415
New Orleans	0.67

*Applies minimum carload 80,000 lb. †Minimum loading 46,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

FABRICATED STEEL BUSINESS

Falling Off to 12,600 Tons of Awards and 9700 Tons of Inquiries

The past week has been an off one in structural steel, but a similar one was shown in the last days of February. In relatively large jobs bookings did not exceed 12,600 tons, and fresh projects called for less than 9700 tons. The report made in this column on March 6 showed some 15,000 tons of awards and 9000 tons of inquiries. In the four weeks intervening contracts let called for 120,000 tons in all and new work appearing averaged 43,000 tons weekly. This week's awards include:

Franklin Bank Building, 327-335 West Thirty-sixth Street, New York, 1000 tons, to Paterson Bridge Co.

Office building, Broadway and Worth Street, New York, 1400 tons, to Levering & Garrigues Co.

Alexander Hamilton Hotel, Paterson, N. J., 1000 tons, to Paterson Bridge Co.

Maine Central Railroad, two bridges, 1400 tons, to American Bridge Co.

United Electric Light & Power Co., addition to Hell Gate power station, New York, 300 tons, to American Bridge Co.

Commercial & Savings Bank, Stockton, Cal., 538 tons, to California Steel Co.

Wentworth Public School, Chicago, 350 tons, to Union Foundry Works.

Ford Motor Co. motor shipping building, Detroit, 400 tons, to McClintic-Marshall Co.

Memorial apartments, Nashville, Tenn., 600 tons, to Nashville Bridge Co.

City of Cincinnati, Gest Street bridge, 125 tons, E. M. Scully Co. low bidder.

U. S. Industrial Alcohol Co., Peoria, Ill., building, 220 tons to General Iron Works Co.

North Smithfield, R. I., wool combing plant, 425 tons, to Lehigh Structural Steel Co.

State Street Trust Co., Boston, addition, 525 tons, to New England Structural Co.

Massachusetts General Hospital Co., Boston, addition, 150 tons, to New England Structural Co.

New England Coal & Coke Co., Everett, Mass., coal pocket and runway, 500 tons, to New England Structural Co.

Sterling Engine Co., Buffalo, addition to plant, 100 tons, to McMannus Steel Construction Co.

Maynard Electric Steel Casting Co., Milwaukee, foundry addition, 140 tons, to Milwaukee Bridge Co.

Grand Trunk Railway at Detroit, Scotten Avenue bridge, 100 tons, to Wisconsin Bridge & Iron Co.

Milwaukee Sewerage Commission, structural T-bars, 100 tons, to Worden-Allen Co.

Ohio River Edison Co., Toronto, Ohio, transmission towers and sub-stations, 2200 tons, to American Bridge Co.

Great Western Paper Co., power house, Ladysmith, Wis., 100 tons, to Worden-Allen Co.

Belmont Avenue viaduct, Youngstown, 900 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

City of New York, North Channel bridge over Jamaica Boulevard, 900 tons, Bethlehem Steel Co. low bidder, but not yet awarded contract.

General Electric Co., two buildings at Pittsfield, Mass., 800 tons.

Edison Electric Co., Boston, sub-station, 500 tons.

Apartment building, Walnut Street, Philadelphia, 1500 tons.

Bell Telephone Co., Philadelphia, building, 350 tons.

Pennsylvania Railroad, bridge in Ohio, 500 tons.

It is expected that contract will be awarded this week for buildings for the Western Electric Co. at Kearny, N. J., requiring 8000 tons.

The Pictorial Review Building, 14,000 tons, awarded a few months ago to the Levering & Garrigues Co. for erection at Ninth Avenue and Thirty-third Street, has been indefinitely postponed and the project may be abandoned.

Indiana Harbor Belt Railroad, bridges, 975 tons.

John Dibert Memorial Hospital, New Orleans, 370 tons.

Woodward-Wight Co. warehouse, New Orleans, 890 tons.

City of Detroit, carpenter and erection shop, 450 tons.

Michigan Copper & Brass Co., Detroit, building, 350 tons.

U. S. Engineers' Office, Louisville, Ky., 5 steel maneuver boat hulls and derricks, estimated 450 tons, bids close April 28.

Columbus Dispatch, Columbus, Ohio, office building, 600 tons, bids to be taken shortly.

Union Gas & Electric Co., Cincinnati, sub-power station, 450 tons, bids being taken.

Davis Welding & Mfg. Co., Cincinnati, building for tank manufacturing, 125 tons, bids in.

Wright & Wetzler, store building, Uniontown, Pa., 450 tons.

RAILROAD EQUIPMENT BUYING

Car Orders for 2000, But No Fresh Inquiries—Some Locomotive Business

Items of size still appear in the railroad equipment field. Besides decisions covering 2000 cars, one of the week's orders calls for 500 hopper car bodies. Ten locomotives were bought and 15 more are under negotiation. Items of chief interest are tabulated below.

Class One railroads on March 15 had 165,914 freight cars in need of repair, or 7.3 per cent of the cars on line, according to the car service division of the American Railway Association. This was a reduction of 2868 cars compared with the number in need of such repair on March 1.

Although no inquiry has been sent out, it is reported that the Baltimore & Ohio Railroad will shortly come into the market for 8000 freight cars.

The New York, New Haven & Hartford Railroad has inquired for 15 mountain type locomotives.

The Union Railroad, a subsidiary of the United States Steel Corporation, has ordered 500 hopper car bodies from the Greenville Car Co.

The Burlington has placed 1000 stock cars with the Streeter Car Co.

The Western Fruit Express is building 1000 refrigerator cars in its own shop.

The Chicago, Rock Island & Pacific Railroad has ordered 10 locomotives from the American Locomotive Co.

Bond Issue of $3,500,000 by Alan Wood

To provide funds for new finishing capacity in its steel mills and to retire notes of $2,500,000, the Alan Wood Iron & Steel Co., Widener Building, Philadelphia, through Drexel & Co., Philadelphia bankers, is offering for sale first mortgage 6 per cent sinking fund gold bonds amounting to $3,500,000.

For treating burns from electrical sources as well as from steam or hot metal, the Abbott Laboratories, 4753 Ravenswood Avenue, Chicago, has developed a product known as Butesin Picrate. It is the work of Floyd K. Thayer, research chemist of the laboratories, and is emphasized as being pain killing as well as antiseptic. It is claimed in fact to be so strongly analgesic as well as anesthetic and antiseptic that the burning sensation disappears within fifteen to thirty minutes.

"The Relation of the Employment Department to the Foremen," a brief address by S. R. Rectanus, assistant manager, Ashland division, the American Rolling Mill Co., Middletown, Ohio, given at the 1923 convention of the American Management Association in New York, has been published by the association. Discussion following the address is included.

Employees of the General Electric Co. are owners of, or are paying on the installment plan for, a total of $11,458,260 in G-E employees' securities corporation bonds. The number of the company's employees who have subscribed to these bonds, which pay 8 per cent as long as the individual remains with the company, is around 267,100.

Engineering courses to be given this summer by the Carnegie Institute of Technology, Pittsburgh, will begin June 16 and run for six and eight weeks. A special short course in coal mining is included.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
April	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
2.....	13.75	13.37½	51.50	8.75	8.60	6.57½	6.22½
3.....	13.75	13.25	54.00	8.62½	8.50	6.65	6.30
4.....	13.75	13.37½	52.50	8.50	8.25	6.67½	6.32½
5.....	13.75	13.25	....	8.50	8.25	6.67½	6.32½
7.....	13.75	13.25	52.50	8.50	8.25	6.67½	6.32½
8.....	13.75	13.25	51.00	8.50	8.25	6.65	6.30

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, April 8.

Demand for all the metals is light. In general consumers producing finished products are not booked far ahead and are buying sparingly in all the markets. Copper is easier but the decline has been small. Tin is a little higher but buying is moderate. The entire lead market is lower. Zinc prices are a little higher but demand is small.

Copper.—Demand for electrolytic copper has again fallen off and there is very little buying either by domestic or foreign consumers. One explanation offered is the lack of forward orders for finished copper and brass products in this country and the unsettled conditions prevailing in Europe. If the Dawes report is accepted by both sides a sharp demand from the other side is expected for copper as well as for some other metals. Quotations during the week for electrolytic copper have seesawed between 13.50c. to 13.62½c., delivered, with sales at both levels, some producers adhering to the higher price. Today the minimum is regarded as 13.50c. with a possible shading by second hands, but with an actual test of the market absent. Lake copper is quoted at 13.75c. to 13.87½c., delivered, largely nominal. The monthly statistical report due today or tomorrow is expected to be favorable.

Tin.—Consumers continue to show no interest, no matter what the trend of the market is from day to day. In the last week it has been generally dull, with sales aggregating around 800 to 1000 tons, mostly between dealers. In the last few months buying by consumers has been of a different character than in former periods. Previously they bought more steadily, but now their purchases are limited more against orders in hand. A feature of the past week was the sudden rise on April 3 of the price for spot Straits followed by a sharp decline. On that day the spot price advanced to 54c., New York, due to the non-existence of metal for that delivery. Firm bids at that price were unsuccessful although April metal sold on that day at 51.87½c. Generally the market has been dull and uninteresting except for the incident referred to. Spot Straits tin today was quoted at 51c., New York, largely nominal. Prices in London were about £2 per ton higher than a week ago at £259 10s. for spot standard, £258 10s. for future standard and £261 10s. for spot Straits. These prices were £7 lower than yesterday and as a consequence the market here was quiet and easier today. Arrivals thus far this month have been 1570 tons, with 10,184 tons reported afloat.

Lead.—The easing tendency which was apparent last week has gained momentum since and prices are considerably lower. On April 3 the leading interest reduced its price for the first time in many weeks from 9c. to 8.75c., New York. Quotations in the outside market are lower at 8.50c., New York, or 8.25c., St. Louis, largely nominal, for April. Consumers seem to be well covered and manufacturing consumption is still heavy. One producer has been following this market down rather eagerly.

Zinc.—Yesterday was characterized as one of the dullest days in a long time and the market is not much better today. Quotations are higher than a week ago, but this has not been caused by any active demand from consumers or even dealers. Some ascribe the moderate advance during the week to the attitude of producers. At any rate the market for prime Western, after advancing to 6.32½c., St. Louis, last week, is today a little lower at 6.30c., St. Louis, or 6.65c., New York, which could possibly be shaded were there any good demand.

Nickel.—Quotations for shot and ingot nickel are unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producer. In the outside market both shot and ingot nickel are quoted at 28c. to 32c. per lb.

Antimony.—The market is decidedly easier, with offerings from China more liberal. Wholesale lots are quoted down to 10.25c., New York, duty paid, for early delivery.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 28c. per lb., duty paid, delivered. Prices of the leading domestic producer are not available.

Old Metals.—Business continues quiet and the market is very unsettled. Lead and aluminum are particularly disturbed. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	13.00
Copper, heavy and wire	12.00
Copper, light and bottoms	11.00
Heavy machine composition	10.75
Brass, heavy	8.25
Brass, light	6.75
No. 1 red brass or composition turnings	9.50
No. 1 yellow rod brass turnings	8.00
Lead, heavy	7.25
Lead, tea	6.00
Zinc	4.75
Cast aluminum	17.50
Sheet aluminum	18.00

Chicago

APRIL 8.—Copper, tin and zinc have advanced, while lead and antimony have declined. Demand for copper has improved, although buying is principally for current needs. Further Chinese importations have contributed to the weakness of antimony. Among the old metals, grades of copper, brass, lead and tin have declined. We quote in carload lots: Lake copper, 13.87½c.; tin, 53.75c.; lead, 8.25c.; spelter, 6.37½c.; antimony, 12c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11c.; copper bottoms, 9c.; red brass, 8.75c.; yellow brass, 7.25c.; lead pipe, 6c.; zinc, 4c.; pewter, No. 1, 28c.; tin foil, 32c.; block tin, 38c.; all buying prices for less than carload lots.

The National Association of Office Managers will hold its fifth annual conference at Niagara Falls, Canadian side, June 12, 13 and 14. The program will include such subjects as "The Office Manager's Responsibility," "Destroying Old Records," "How to Meet the Demand for Office Help," "Branch Office Control," "Intelligence and Job Tests," "Training Employees," "The Schools and Industry," "Salary Standardization," and "Constructive Supervision." T. G. Woolford, Retail Credit Co., Atlanta, Ga., is secretary of the association.

Exports of manufactures in February amounted to 127.4 million dollars or something over 18 per cent more than in February, 1923. Imports of manufactures amounted to 57.9 millions, or not quite 11 per cent more than the imports of February, 1923. The February exports of manufactures and materials for manufacturing combined amounted to 291.7 million dollars or over one-fifth more than the imports of manufactures and materials.

Loadings of revenue freight during January, February and the first half of March has made a new record for the period this year with 9,771,075 carloads, according to the American Railway Association, compared with the previous record made last year of 9,463,648 carloads. In 1922 the figure was 8,242,088 carloads.

PERSONAL

Judge E. H. Gary, chairman United States Steel Corporation, is homeward bound from South America and is expected to arrive in New York next Tuesday.

Charles F. Smith, who has been engaged in designing automatic machinery and in sheet metal work for the last 25 years, has become associated with the Garvin Machine Co., 139 Varick Street, New York, which plans gradually to develop a line of light and heavy automatic machinery. Mr. Smith spent 12 years with the Holland Bag & Paper Co., Dexter, N. Y., and eight years with the Continental Paper Bag Co. For several years he conducted a business of his own, designing various kinds of automatic machinery. He was co-author of "The Design and Construction of Cams."

Alexander MacDonald, formerly Connecticut sales-agent for the Reed-Prentice Co., Worcester, Mass., has become connected with J. L. Lucas & Son, Bridgeport, Conn., and will cover the same territory.

B. A. Shutz, formerly of the Chicago district sales office of the Central Foundry Co., has been elected vice-president of the company, succeeding the late William H. Starke.

William R. Reid, general manager Torrington Co., Torrington, Conn., has been made president of the company to fill the vacancy caused by the death of John F. Alvoid.

J. Arthur Deakin will represent the Universal Milling Machine Co., Hudson, Mass., in New York with headquarters at 150 Nassau Street. Mr. Deakin learned the business with H. W. Ward & Co., Birmingham, England, and represented that firm in the United States for several years. When the Birmingham firm stopped selling American machinery, Mr. Deakin became associated with Isbeque, Todd & Co., Brussels, that firm having relinquished its New York office, April 1, last.

Archil Loyer has been appointed Cleveland district sales manager of the Fitzsimons Co., Youngstown, Ohio, dealer in cold finished steel. He will be assisted by John Keleher.

H. A. Robinson, who for the past three years covered the pig iron, coke and alloy trade in the New York territory, is now associated with the Philadelphia sales office of Crocker Brothers.

Arthur W. Fox, vice-president and general manager Johns-Pratt Co., Hartford, Conn., has been made vice-president and general manager of the Billings & Spencer Co., that city. Heretofore F. C. Billings, president, acted as general manager. Mr. Fox was associated with Johns-Pratt Co. 17 years, starting as a clerk. He will continue to serve the company in an advisory capacity.

K. T. Keller, formerly manager of production for the Chevrolet Motor Co. has been appointed general manager of the General Motors of Canada, Ltd., with offices at Oshawa, Ontario.

J. F. Whalen, who for the past 14 years has represented Manning, Maxwell & Moore, Inc., in Eastern Pennsylvania, has resigned effective May 1. After a short vacation he will engage in business in Philadelphia.

E. R. Perkins has been appointed general manager of the Allegheny Steel Co., Pittsburgh, succeeding E. B. Brown who has been made assistant to the president. W. Frank Detwiler has been named assistant general manager, vice Mr. Perkins.

Harvey Lee, formerly in charge of the Cincinnati district for the Wilson-Maeulen Co., 383 Concord Avenue, New York, has been transferred to the Pittsburgh district and will have offices in the Fulton Building, Pittsburgh. His vacancy in the Cincinnati territory is filled by F. G. Hunt, whose address is 403 Upland Place, Cincinnati.

C. J. Maas, formerly assistant secretary of the Judson Mfg. Co., San Francisco, manufacturer of open-hearth ingots, plates, shapes, etc., has been elected president, succeeding the late H. E. Bothin. Mr. Maas was born at Eau Claire, Wis., in 1897 and went to California in 1904. Previous to his association with the Judson company in 1917, he was connected with Mr. Bothin in the Bothin Real Estate Co.

B. A. Wallingford of Walter-Wallingford & Co., Cincinnati, accompanied by Mrs. Wallingford, will sail April 16, for a three-months tour of Europe.

Talbot E. Pierce, for many years superintendent of the Semet-Solvay Co., Cleveland, has severed that connection and hereafter will be located at Waterford, Logan County, Virginia.

Dan C. Swander has resigned as vice-president of the Eaton Axle & Spring Co., Cleveland. He was formerly connected with the Standard Parts Co. as vice-president and director of sales, and at the time of the purchase by the Eaton company of the Perfection spring business he was induced to change his plans in order to remain with the new company through the transition period. Feeling that this work is finished, Mr. Swander now plans to take a long deferred vacation, with a trip to California, before settling down to new work.

E. A. Bissell, Westinghouse Electric & Mfg. Co., Pittsburgh, will address the Cleveland section of the American Welding Society, April 15, on "Application of Electrical and Acetylene Welding in Navy Yards."

E. L. Essley, president E. L. Essley Machinery Co., Chicago, has returned to that city after a three months' sojourn in Florida.

Fred C. Schreiber, for the past six years in the sales department of the Stocker-Rumely-Wachs Co., machinery merchant, Chicago, has resigned.

William C. Rudd, formerly of Louisville, Ky., has opened an office in Cincinnati, where he is engaged as consulting engineer in the steam engineering field as applied to water, power and heating plants and industrial purposes.

Charles N. Winter, managing editor of the Locomotive Cyclopedia and the Car Builders' Cyclopedia, has resigned to become general manager of the Rogatchoff Co. of Baltimore, Md. The sales offices will be located at 90 West Broadway, New York, and in the Koehler Building, Ridgewood, N. J.

H. A. Schultz, formerly sales manager of the Frederick Pump Co., has been appointed manager of the newly opened office of the Moore Steam Turbine Corporation, Wellsville, N. Y., at 319 Third Avenue, Pittsburgh.

W. S. Pilling of Pilling & Co., pig iron merchants, Philadelphia, has returned to his office from Florida, where he spent about two months.

J. J. Nolan, for several years connected with the Hartford Machine Screw Co., Hartford, Conn., as sales director, has been appointed in a similar capacity by the Wright Machine Co., Worcester, Mass.

W. E. Watson, general sales manager of the Youngstown Sheet & Tube Co., Youngstown, has returned from a trip to the Pacific Coast, during which he visited a number of the company's branch agencies in the west. Mr. Watson states that steel demand is holding as strong as it has been recently and he looks for considerable improvement with warmer weather. Despite the fact that Southern California is suffering from lack of rainfall, business conditions on the Pacific Coast are prosperous, he states.

David N. Mauger, who has been associated with the Babcock & Wilcox Co., New York, since 1911, has been appointed assistant to the president. C. W. Middleton, formerly engineer and salesman in the marine department, was promoted to the same position. His duties will continue in the marine department, while Mr. Mauger will be in the stationary department.

OBITUARY

ELIPHALET REMINGTON, lone surviving member of the firm of E. Remington & Sons, manufacturer of Remington rifles, died April 2 in his ninety-sixth year. Upon attaining his majority in 1849 he was employed by his father and in 1856 the firm was established. Adoption of the Remington gun by the United States Government during the Civil War and also by foreign governments brought great prosperity to the company in 1870.

GEN. EDGAR B. JEWETT, mayor of Buffalo from 1895 to 1898 and head of the Jewett Refrigerator Co., died March 28, at Clifton Springs Sanitarium, where he went to regain health. His father was founder of the Jewett company in 1849. After a distinguished career in the Civil War, General Jewett became its president in 1885. He was born in Ann Arbor, Mich., in 1843.

GEORGE W. BENTON, president Conneaut, Ohio, Shovel Works, was gored by a bull on his Holstein farm, near Westfield, N. Y., on March 30, aged 47 years. He died from the injury on the following day. Mr. Benton had just returned from a trip to the Pacific Coast.

RAYMOND M. HOWE, an authority on ceramics, died of pneumonia at his home in Edgewood, Pa., April 1. He was born at Elmira, N. Y., in 1894, was graduated from Alfred University, Alfred, N. Y., in 1915, and continued his studies in the graduate school of the University of Pittsburgh. In 1917 he was appointed senior industrial fellow in the Mellon Institute of Industrial Research, Pittsburgh, in which position he was engaged in carrying out investigational work on refractories under the auspices of the Refractories Manufacturers' Association. Since April 1, 1923, he had been in the employ of the Kier Firebrick Co., Pittsburgh, as technical assistant to the president. He served four years as a trustee of the American Ceramic Society and was vice-president of that organization at the time of his death.

WILLIAM ORLANDO HARRIS, Malden, Mass, for 47 years associated with the Rodney Hunt Machine Co., Orange, Mass., of which his brother Nelson Harris is president, died March 30 at the Malden Hospital in his sixty-ninth year. In addition to being treasurer of the company, Mr. Harris was in charge of the Boston office up to eight years ago, when he retired from business.

HERBERT V. PURMAN, a mechanical engineer associated with Stone & Webster, Inc., died at his home in Winchester, Mass., Wednesday night, April 2. Though born at Plattsville, Wis., he lived for some time at Rochester, N. Y., before becoming identified with Stone & Webster, Inc.

P. W. SOMMER, president and general manager of the Keystone Steel & Wire Co., Peoria, Ill., who with his brother, John Sommer, and his father, the late Peter Sommer, founded the company, died April 6.

J. L. MOORE, president and founder of the Moore Steam Turbine Corporation, Wellsville, N. Y., died suddenly on April 2, after a brief illness. Mr. Moore came to Wellsville about 20 years ago as general manager and chief engineer of the Kerr Steam Turbine Co. About eight years ago he incorporated his own company.

Building permits were issued in St. Louis last month for improvements to cost $2,560,825, an increase of $220,940 over February. Permits for March, 1923, amounted to $4,237,585, $1,676,760 more than last month.

"A Process for the Production of Sponge Iron" is discussed by Clyde E. Williams, Edward P. Barrett and Bernard M. Larsen, Bureau of Mines, Seattle, Wash., in a mimeographed pamphlet, Serial No. 2578.

Barber-Colman Co. Acquires Webster & Perks Grinding Machines

The Barber-Colman Co., Rockford, Ill., manufacturer of milling cutters, hobs, hobbing machines and hob sharpening machines, has purchased the entire line of grinding machines of the Webster & Perks Tool Co., Springfield, Ohio. The purchase includes drawings, patterns, tools, rough castings and finished parts, also several completed machines.

The line consists of a universal cylindrical grinder and plain manufacturing grinder. The cylindrical grinder is particularly adapted to tool room work, although it will cover a large field as a general purpose grinder. Its normal range is 10 x 30 in. The plain grinder is for either straight or taper cylindrical grinding on centers. It was built to assure extreme accuracy, but was not designed as a high production machine. Its normal range is 6 x 30 in. The automatic cross feed, table drive and reversing mechanism are emphasized as special features of both machines.

The completed machines are offered for sale. They will be inspected and questionable parts will be replaced. Special attention will be given, it is said, to the sliding table ways, and where necessary these ways will be rescraped. The machines also will be tested under belt.

Simplification in Sheets and Other Steel Products

Simplification in respect to sizes of various iron and steel products will be one of the subjects for discussion at the annual convention of the American Iron and Steel and Heavy Hardware Association to be held at the Westchester-Biltmore Country Club, Rye, N. Y., May 13 to 15. In the current number of the Bulletin of the association a number of the members express themselves in favor of the simplification movement. The subject will be presented at the forthcoming convention by E. W. McCullough, manager of the department of manufacture, Chamber of Commerce of the United States. Mr. McCullough has been working for some time in cooperation with the division of simplified practice of the Department of Commerce. Some of the products in which there might be a reduction in the number of sizes and styles manufactured, as suggested by the dealers in iron and steel, are the following: steel sheets, rims, tire steel, blunt calks, vises, wrenches, anvils, hammers, sledges, planes, tacks, spring cotters, toe calk steel, grinding wheels, files.

The average daily production of electricity by public-utility power plants in February exceeded all previous records of output with a production of 168,300,000 kwhr. per day. This figure exceeds the previous record established in January by a small amount. Based on the records of output for January and February for 1922 and 1923, the production of electricity by public-utility power plants for 1924 is apparently starting off under the same favorable conditions which produced the record outputs of production of electricity in 1922 and 1923. The quantities are based on the operation of about 4000 power plants, each producing 10,000 kwhr. or more per month, engaged in generating electricity for public use, including central stations, electric railroad plants, and certain other plants that contribute to the public supply. The total capacity of the generators in these plants is about 17,800,000 kw.

The Combustion Utilities Corporation will continue its line of large recuperative furnaces for the steel, ceramic and malleable iron industries, and will shortly announce plans for a development of this department. The large furnace division will continue under the direction of F. W. Manker, sales manager, who has been in charge of the department since July 1, 1923.

The output of the iron mines of Tunis in 1923 was 845,000 tons.

Indications of Improvement in Business in Youngstown District

YOUNGSTOWN, April 8.—Valley steel makers declare that all indications point toward improvement in business during the next few weeks, this belief being entertained by the leading interests. Orders for holdups against existing contracts are still being received, especially affecting sheets, but the market has a healthy undertone, say makers.

Manufacturing consumers of steel products have low stocks, and such contracts as they have are for comparatively short periods.

In this district tin plate makers are operating on as broad a scale as physical capacity will permit. Most of the output is going to canners and packers, who expect that 1924 will be a good year.

In the full-finished sheet market, makers are experiencing difficulty in maintaining operations due to cancellations and holdups issued by the principal automobile interests. In fact, some curtailment has already occurred. Such makers state, however, that the automobile builders as a rule have not built up large stocks, and they look for buying on a larger scale as soon as warmer weather stimulates retail buying of cars.

Non-integrated sheet rollers purchasing sheet bars from district producers are still endeavoring to obtain concessions, in view of the lower prices prevailing for pig iron and scrap metals.

Heavy melting scrap has declined to a range from $17.50 to $18, to consumers, in this district. Melters, who are the chief purchasers, are still hesitant in contracting for any sizable tonnages, while dealers are reluctant to buy ahead except under firm orders.

Merchant iron producers say there is little chance of profit at the current market, with buying on a limited scale.

The bright spots in the finished steel market are merchant pipe and tin plate. Plate and bar business is steady, but does not show any unusual activity.

Wage Advance at St. Louis

ST. LOUIS, April 8.—The Sheet Metal Workers have agreed to sign a new contract with the Associated Building interests on the basis of $1.37½ an hour, an increase of 12½c. The men had demanded a 25c. hourly increase. The Painters' and Asbestos Workers' Unions are the organizations at variance with the employers.

Decreased Mill Activity in the Mahoning Valley

YOUNGSTOWN, April 8.—In the Mahoning Valley this week, finishing mill schedules are on a declining basis, but ingot production remains the same as the previous week. This is the first time in four weeks that steel-making has not declined. The Newton Steel Co. has taken four sheet mills off the active list, reducing the number of active rolling mills from 20 to 16.

Of 66 open-hearth furnaces in the Mahoning Valley, 47 are melting, including 33 independent units, of 51. The Youngstown Sheet & Tube Co. is operating 12 of 24 open-hearth furnaces, one less than last week, while the Republic Iron & Steel Co. has added a furnace, bringing its total to nine active, of 13.

The Trumbull Steel Co., which has maintained production at virtually a capacity rate for the past three months, reports this week a somewhat lessened schedule, particularly affecting its strip and sheet departments. Its rolling mills are operating at 90 per cent.

The Republic company has suspended its plate mill, leaving as the only active plate mills in the district the two at the Brier Hill works of the Sheet & Tube company.

There is no change in tube mill schedules, 16 of the 17 pipe furnaces being fired.

Active sheet mills show a reduction, 94 of the 120 mills in the Valley being under power as follows—Sheet & Tube company, 21; Republic Iron & Steel, 14; Newton Steel, 16; Trumbull Steel, 12; Sharon Steel Hoop, nine; Mahoning Valley Steel and Falcon Steel, eight each and the Thomas Sheet Steel Co., six.

Plant of the Waddell Steel Co. at Niles is still inactive, its mills being under repair.

Fabricators such as the Truscon Steel Co., and the General Fireproofing Co., report accelerated schedules.

There is likelihood that the Sheet & Tube company may bank No. 2 blast furnace at Hubbard, Trumbull county, No. 1 furnace in this group having been suspended last week.

Decision as to Fabrication in Transit

WASHINGTON, April 8.—Passing upon the complaint of the Parkersburg Rig & Reel Co., the Interstate Commerce Commission has handed down a decision holding that failure to accord fabrication in transit at Parkersburg, W. Va., on iron and steel articles was not unreasonable but as to iron and steel sheets No. 16 gage and heavier, it was found to be illegal on and after Aug. 12, 1921. No damage was shown to have resulted from alleged undue prejudice according to the decision, and reparation was denied.

The report affirms a previous finding and dismisses the complaint. The complainant makes tank material at Parkersburg and attacked the Baltimore & Ohio for failure to grant fabrication in transit at Parkersburg on steel products from points in Pennsylvania, Ohio and other producing sources, and requested reparation and establishment of such a privilege at Parkersburg.

President Ker Optimistic in Regard to Business Conditions

President Severn P. Ker of the Sharon Steel Hoop Co., Sharon, Pa., operating properties in that city and in Youngstown, Ohio, believes the low point in the current buying lull has been reached and that improvement may be expected from now on. Mr. Ker states his company has enough unfilled orders on the books to render its position for the second quarter fairly satisfactory.

He points out that retrenchment in buying started several weeks ago, at a time when consumers' stocks were low. In the meantime buying has been well maintained. In consequence stocks of consumers have been brought to the point where they need replenishment.

In March, the Sharon Steel Hoop company, states Mr. Ker, established new production and shipping records, and all units which have been in commission at any time in the past few years are active. The company has a number of idle open-hearth furnaces at its Sharon plant, which are small, 35-ton capacity, built prior to the development of modern open-hearth practice. The question of abandoning these units is under consideration, but no decision has yet been reached.

The Youngstown Sheet & Tube Co., Youngstown, has placed employees in its safety department on 8- and 10-hr. shifts, and elimination of the 10-hr. turn at a later date is under consideration. The Republic Iron & Steel Co. is also considering adjustments in the hours of its safety department workers. Effective April 1 the Carnegie Steel Co. placed its safety department employees on 8-hr. turns, in the Youngstown district.

The Birmingham Chamber of Commerce, Inc., in conjunction with the Institute of British Cast Iron Research Association, are organizing an International Foundry Trades Exhibition which will be held at Bingley Hall, Birmingham, from June 19 to June 28, 1924. Consul J. F. Jewell has informed the Department of Commerce. An extensive program is being prepared which will include lectures on foundry practice and a series of films showing equipment and processes of manufacture.

BOOK REVIEWS

Metals and Metallic Compounds. By Ulick R. Evans, M. E. In 4 volumes. Vol. I: Introduction, Metallography, Electro-chemistry. Pages 468; 8⅝ x 5½ in.; illustrations, 91. Published by Longmans, Green & Co., New York. Price of this volume, $7.

Some books are peculiar, some remarkable, some valuable; this one is all three. It is remarkable for the amount of valuable and correct information that it contains; peculiar in that it commences with an introduction in which there is set forth the general knowledge of chemistry. physics and geology that in the body of the book the reader is assumed to possess, and which in nine cases out of ten he does not. (Some, in fact, are advised to commence at page 135, referring back to the introduction when they find it necessary.)

Luckily, this introduction, while treating electricity, the elements and their methods of combination, the states of matter, chemical reactions and equilibria, electrical chemistry and the determination of atomic weights, thermo-chemistry, radiation, geo-chemistry, and metallurgy, in a fairly up-to-date manner, does it in a way calculated to appeal to the non-mathematical reader; and I would advise no one to skip it.

The second part of this first volume, the study of the metallic state, handles the structure of simple metals, as they solidify from the fused state and as modified by mechanical work, pyrometry and cooling curves, and the structure of alloys.

One might think that in this portion, quite scientific enough to be interesting to the average technical high-school professor, there would be little or nothing to interest, say, the machinist; but he could always learn concerning the action of polishing materials on page 172; and the Desch-Shepherd diagram of the copper-zinc system, page 219, should be worth thousands of dollars to the brass founder as well as to the machine designer.

Part II of this volume, taking up the study of the ionic state (electro-chemistry) considers first the passage of electricity through solutions of all grades of conductivity, applies the ionic theory to the chemical behavior of solutions. (Deep water for many, especially in view of the difference of opinion concerning the correctness of various definitions of "ion" and the Ostwald dilution law; still, time's worth.) The next chapter, on the colloidal state in metals and metallic compounds, opens out a new field—also a new vocabulary—to many. When he comes to the decomposition voltage and the electromotive force of cells, and the chapters on single-electrode potentials, the average reader is more at home, although he would hardly expect to read about the "single calomel" scale of potentials.

The chapter on the deposition of metals upon the cathode has its practical value not only for those who do electrotyping and electroplating, but to those who use the results of those processes. Those of us who have been troubled by the difficulty of nickel plating upon aluminum are glad to learn that the oxide film may be removed by abrasion. When it comes to the Chapter XIV—corrosion of metals—every one should be highly interested in the manner and matter; such information as that about corrosion through stray electric currents concerning most of us.

The last chapter, on radio activity, is perhaps more interesting than immediately useful; but is there, waiting for the time when we or those who follow us can make use of it.

A very thorough index completes the volume, the value of which is enhanced by a long list of journals referred to; and by the fact that the illustrations are furnished with explanatory legends.

ROBERT GRIMSHAW.

"Steinmetz and His Discoverer" is the title of a 24-page booklet just published by Robson & Adee, Schenectady, N. Y. The booklet was written by John T. Broderick, an early associate of Dr. Steinmetz in the General Electric Co., and at present employed there. He is also author of "Pulling Together," a book on industrial relations, containing an introduction by Dr. Steinmetz. Mr. Broderick points to E. Wilbur Rice, Jr., as the discoverer of Steinmetz, and their meeting in a Yonkers workshop 30 years ago is described. An outline of the growth of the electrical industry during the past twenty years follows as a prelude to Mr. Broderick's description of the influence of the two men on electrical progress.

Sheet Metal Drafting (Prepared in the Extension Division of the University of Wisconsin). By Ellsworth M. Longfield. Pages 236, 6 x 9 in.; illustrations, 327. Published by the McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, $2.25.

This work, especially adapted for correspondence-school study, would also be excellently adapted as a text book in vocational schools, as has been proved by several years' practical application. It should aid in doing away with the idea that a tremendous amount of mathematical knowledge and drafting experience is necessary in laying out any kind of sheet-metal work. That this is not true your reviewer has seen in a factory in Bohemia (incidentally copying an American blower almost screw for screw, including the advertising cuts) in which boys of thirteen were employed in laying out as well as soldering and spot-welding pipe lines of the most complicated and varied character for heating and ventilating installations. Having been given the idea in advance that sheet-metal drafting was as easy as rolling off a log, they soon found themselves, under good commonsense instruction, entirely independent of their foremen, in doing work on a practical paying commercial basis.

This work contains an infinite number of various strictly commercial problems, solved in detail. Particularly praiseworthy is the method of presenting the problems in three columns, respectively, the job, with a sketch, as "Sprinkling Can," the drawing objective as "Extension of the idea of cylinders and cones cut by inclined planes" and the mathematical objective, as: "Lateral area of cylinders and cones; volume of cylinder."

I might suggest that in future editions crimped elbows be given a little space; also long taper pipes as used in drawing off dust from buffing wheels; and that the student be given some idea of how to calculate the carrying capacity of pipes of a given diameter, and the influence of elbows on draft. Further: to solve such problems as how to figure the dimensions of cans to contain a given cubic content with minimum material. This is a problem that came up in a can factory, and was solved by about thirty tentative calculations by the "cut-and-try" method; when slight knowledge of elementary mathematics would have told the draftsman that the case is met by making the cylinder with height equal to diameter.

Atlas of Traffic Maps. By Charles E. Wymond, official cartographer Central Freight Association. Cloth, 7¾ x 11 in.; published by La Salle Extension University, Chicago, 1924. Price, $4.50.

While this is the first book of its type, it is a development from long study of traffic work and is one of a series of reference books, comprising a scientific course of training in traffic management. Mainly the work consists of 21 folding traffic maps, covering railroad and highway systems throughout the United States and Canada, and devoted to traffic problems of shippers by freight, express or automobile truck, all over the country. This group of maps is followed by individual maps of 13 railroad systems, covering a large part of the area of the country.

Among the maps shown are portrayed accurately not only railroad classification and rate structure groupings, but also rail, ocean and inland, waterway and motor highway routes, express and parcel post zones, and industrial regions. All of this is put together for the use of those charged with responsibility for the expeditious movement of traffic and is so explained as to avoid tedious study of freight tariff regulations. It is designed not only for the use of students of traffic

management, but also as an independent reference book for traffic executives.

Materials of Construction: Their Manufacture and Properties. By the late Adelbert P. Mills. Second edition, edited by Harrison W. Hayward. Pages 476, 6 x 9 in.; illustrations, 192. Published by John Wiley's Sons, Inc., New York. Price, $4.

Professing to cover a great range of materials, this work does this imperfectly, being neither strictly thorough nor yet popular.

Taking it *seriatim:* gypsum for casts and that for construction are insufficiently differentiated; the evil influence of magnesium in lime mortar as seen in its effects (efflorescence); where the bricklayers preferred dolomitic lime to the pure, by reason of its greater plasticity. The cement chapter is not up on European practice, ignoring, as it does, "montanzement," which is in many respects different from and in some exactly contrary to the usual slag cement here; for instance in setting and in its resistance to salt water, in its action on iron and steel, and the effect thereon of the addition of gypsum. Shell limestone, that beautiful building material so dear to European architects, receives no mention. The auger type of brick machine does not, as stated, always use wire for cutting; as the best types use a spiral knife; and all stiff-mud bricks are not wire cut. The disadvantages of auger-machine-made bricks for paving in cold countries, by reason of their flaking under the influence of frost, is important enough to have received mention. Porous bricks, made by mixing sawdust with the clay, are ignored; enamel bricks almost so.

The definition of steel, taken from Howe, is at best a negative one. Some of the best electric melting furnaces, and the drop bottom cupola, are omitted. Eutectics are treated unclearly; the effect of manganese in protecting cast iron from corrosion is left out; monel metal and its congeners are neglected; as is the Boucherie method of impregnating wood in the log by forcing the preserving fluid from butt to tip. The difference between American and British practice as regards the direction of twist in rope is worth noting, as ignorance thereof causes slovenly coiling.

ROBERT GRIMSHAW.

Magnesium, Its Alloys and Properties

"Magnesium" is the title of a handbook recently issued by the American Magnesium Corporation, Niagara Falls, N. Y. It is a neat booklet of 177 pages, giving information and data relating to the use of magnesium and magnesium alloys as made by that company. Besides various chapters on the chemical and physical properties of the metal itself there are sections discussing 19 different alloys of magnesium with other metals, followed by data on their mechanical properties, their commercial forms, their fabrication and structural and chemical uses as well as other information. The book is well illustrated with charts and tables covering the various technical phases of the different metals and alloys. The book concludes with methods of analysis for magnesium metal and the determination of impurities therein. There is added a complete bibliography as well as a complete index.

Mayari Pig Iron

A valuable contribution to the literature of alloy pig iron and iron castings is contained in a small book issued by the Bethlehem Steel Co., Bethlehem, Pa., entitled, "Bethlehem Mayari Pig Iron." It contains two articles by Dr. Richard Moldenke on the effect on castings of nickel and chromium as contained in this brand of pig iron, the articles being based on an extensive investigation. The book also contains the company's own descriptions of Mayari iron which cover the analysis, the uses in such products as rolls, automobile engine castings, car wheels, etc. There is also a section on analysis specifications. The book contains 103 pages.

NEW TRADE PUBLICATIONS

Heat Insulation Data.—Philip Carey Co., Cincinnati. Bulletins 102 and 103, of four pages each, deal respectively with heat losses from bare iron surfaces and heat transmission tests on a wide range of materials. Curves and tables occupy the greater portion of the four pages devoted to heat losses, one full-page table being figured out on the basis of dollar losses under varying conditions, and on the assumption of definite coal prices and quality. Under the heat transmission tests most of the space is covered by curves, the tests having been made in educational or research institutions. The curves are on the basis of loss of heat for each square foot of exposed surface, per degree temperature difference, and cover not only varying materials but also varying thicknesses.

Sand Blast Machinery.—J. W. Paxson Co., Philadelphia. A 48-page illustrated booklet containing complete descriptions of sand blast rooms, barrels, tables, cabinets, hose machines, dust collectors and accessories, manufactured by this company in its new plant.

Valves.—Homestead Valve Mfg. Co., Homestead, Pa. Catalog of Homestead valves, 1924 edition, containing illustrations and descriptions of valves of all types. Additions to the line in the past year include the Homestead quarter-turn lubricated valve.

Metallic Interior Trim.—Milwaukee Corrugating Co., Milwaukee, Wis. A booklet of 12 pages and cover artistically illustrated to show uses of metallic construction for the interior of homes. Metal lath, corner beads, door and window casings, picture molding and other products are shown.

Calendar.—The Osborn Mfg. Co., Inc., Cleveland. Size 14 x 17 in. Calendar is white on black; the months begin with March, 1924, and end with February, 1925. Views of foundries using the company's molding machines are shown on each sheet, above the calendar for the month.

Foundry Mold Dryers.—T. Ketin & F. Thiriart, Sclessin-lez-Liege, Belgium. An illustrated brochure showing a variety of the portable furnaces for drying molds in place. The illustrations show adaptation of dryers (which employ coke and have a small fan attached), to the mold of the flywheel 18 ft. in diameter and weighing over 48,000 lb., to a group of ingot molds for ingots weighing from 1800 lb. to something over 2 tons, etc. The brochure is in French and covers one of a large line of apparatus made by the company for iron, steel and brass foundries.

Micrometers.—Reed Small Tool Works, Worcester. Condensed catalog No. 5 of 24 pages, 3 x 6 in. Micrometer calipers, inside micrometers, end measures and other equipment are described and illustrated and list prices are given. Space devoted to useful information includes English and metric tables, which will be helpful to both office and shop men.

Abrasive Finishing Machines.—Production Machine Co., Greenfield, Mass. Booklet of 24 pages, 6 x 9 in. under title of "Hidden Profits" directs attention to the possibilities in reducing costs in polishing and finishing departments. The company's vertical abrasive finishing machine, machine for flat work and the type R combination unit for disk grinding, polishing, burring, etc., are described and illustrated.

Blower for Cheaper Coal.—Buffalo Forge Co., Buffalo. Two leaflets devoted to a motor-driven fan for domestic use in burning coal of the lower grades. Definite pressure is substituted for the suction of the chimney, in the interest of complete combustion of the less combustible fuels. Intermittent operation is provided for.

Pickling Made Efficient.—American Chemical Paint Co., Ambler, Pa. Bulletin No. 15 of 48 pages deals with the use of rodine extract as an aid in pickling. Added to the cleaning bath, small quantities of this chemical are said to cheapen the process, produce better work and improve the conditions in the cleaning department. Attention is called to the waste of metal through the action of sulphuric acid in removing scale and rust, and to the possible reduction in this waste and in the choking fumes rising from the pickling vat through the use of rodine. The book is practically a treatise on the subject of pickling, going into the chemistry involved and showing photomicrographs of various surfaces under various conditions of treatment.

Machinery Markets and News of the Works

HESITATION AMONG BUYERS

Machine-Tool Trade Generally Not So Active as in March

Prospective Railroad Buying the Only Important Business Now in Sight

A spirit of hesitation among buyers of machine tools is held mainly responsible for a reduced volume of business this month as compared with March. Except for prospective railroad purchases the market is devoid of important features.

The Atchison, Topeka & Santa Fe has added two tools to its pending inquiries, making a considerable list on which action may be taken soon, but there is no definite assurance of this. The Southern Railway, whose list has been pending for some weeks, is expected to buy this week. The New York Central, Rock Island and the Santa Fe has each purchased one large machine.

In the automobile industry buying is restricted. The Ford Motor Co., Detroit, continues to buy in a limited way, among its purchases being a 6-in. spindle horizontal floor borer. It is reported to have bought 40 presses and the Dodge company is said to have bought 20.

The Warren Foundry Co., Warren, Ohio, is buying equipment for its new foundry and will also require a number of machine tools.

The Chicago Board of Education has issued an inquiry for several tools for technical high schools.

New York

NEW YORK, April 8.

MACHINE-TOOL business so far this month has not equaled the March rate, which was none too good. A greater hesitation among users of tools is noted and orders come slowly. Some of the more important orders have come from railroads and railroad car shops in the Chicago district. The Atchison, Topeka & Santa Fe bought a 90-in. wheel quartering machine, the Chicago, Rock Island & Pacific a 58-in. x 16-ft. rod milling machine and the Pullman Co., Pullman, Ill., a journal turning and axle lathe. The Pittsburgh district has also contributed a little business. The Youngstown Sheet & Tube Co., Youngstown, Ohio, bought from an Eastern company a 5-ft. boring mill; the Page Steel & Wire Co. bought a 2500-lb. steam hammer for its works at Monessen, Pa., and the Struthers-Wells Co., Warren, Pa., steel plate construction, bought a 10-ft. vertical boring and turning mill. Other orders have been placed by the Canadian National Railways, including a 42-in. x 16-ft. horizontal milling machine. The New York Central has bought a 48-in. x 12-ft. planer.

The John Kunst Co., 43 Murray Street, New York, manufacturer of metal and wood patterns, etc., plans the purchase of a lathe, about 14 in. x 6 ft., quick change type.

The Wilbur F. Hudson Corporation, 50 Church Street, New York, engineer and contractor, is desirous of locating a steel fabricating shop in the Central South, to handle a quantity of work.

The Public Works Tenders Board, Wellington, New Zealand, will receive bids until May 21 for a hydroelectric power house and equipment for the Arapuni Electric Power Scheme as per plans on file at the office of the secretary.

Bids are being asked (no date stated for closing) by the municipal government, Mehalla el Kobra, Egypt, for pumping machinery, power equipment, filters and accessory apparatus for a proposed waterworks. Specifications and forms of tender on file at the New York office of the Bureau of Foreign and Domestic Commerce, 734 Customhouse.

J. J. Dunnigan, 394 East 150th Street, New York, architect, is drawing plans for a two-story automobile service and repair building at Jerome Avenue and 181st Street, to cost $200,000 with equipment. C. M. Rosenthal, 132 Nassau Street, is owner.

The Pierce Petroleum Corporation is being formed by officials of the Pierce Oil Corporation, 25 Broad Street, New York, with capital of 2,500,000 shares of stock, no par value to take over the refineries and other properties of the last noted organization. A capital stock issue to total $9,100,000 is being arranged, of which approximately $2,000,000, will be used for extensions and improvements in plants and equipment. W. H. Coverdale is chairman of the board.

The Hawaii Commercial & Sugar Co., Honolulu, Hawaii, with plant in the vicinity of Kekaha, Island of Maui, Hawaii, is completing plans and proposes to place orders shortly for equipment for a 5000-kw. hydroelectric generating plant in the vicinity of Kekaha, for sugar mill service.

The Brooklyn Borough Gas Co., 2909 South Seventeenth Street, Brooklyn, will take bids before this month for a two-story mechanical plant at Coney Island Avenue and Sheepshead Road, 200 x 200 ft., consisting of machine shop, meter repair department, automobile service works and general distributing warehouse, estimated to cost $150,000 with equipment. Block & Hess, 18 East Forty-first Street, New York, are architects.

The Manning Paper Co., Green Island, Troy, N. Y., is said to be planning for the installation of additional equipment at its local mills, including rolls, roll grinders and auxiliary apparatus.

The Baldwin Packers, Ltd., Lahaina, Hawaii, has plans for a new can manufacturing plant adjoining its fruit packing works, estimated to cost $125,000 with machinery. Harry A. Baldwin is president.

The Long Island Railroad Co., Pennsylvania Terminal, New York, has authorized a fund of $12,000,000 to $15,000,000 for extensions and betterments. The work will include the electrification of the Montauk Division, from Jamaica to Babylon, L. I., estimated to cost $4,000,000 with power equipment and other machinery; electrification of the line from Bay Ridge, Brooklyn, to Fresh Pond Road, to cost $1,200,000; additions in car and locomotive repair shops and equipment, $400,000; extensions in the freight terminal at Long Island City, with additional float bridges, material-handling equipment, etc., to cost $1,000,000.

M. F. Westergren, Inc., 213 East 144th Street, New York, manufacturer of sheet metal products, has awarded a general contract to Hubener & Escher, 748 Melrose Avenue, for a one-story plant, 25 x 130 ft., to cost about $200,000 with equipment. A. E. Davis, 258 East 138th Street, is architect.

The Industrial Machinery Division, Room 815 Bureau of Foreign and Domestic Commerce, Washington, has information regarding a company in Mexico City, Mex., which proposes to construct a cement mill, using American equipment. Catalogs of such machinery will be received for reforwarding to the office of the Commercial Attaché, Mexico City. Reference No. 498-2/28.

The Charles J. Bogue Electric Co., 512 West Twenty-ninth Street, New York, manufacturer of electrical equipment, has leased the fifth floor in the factory at 132-38 King Street, for an addition.

The Merchants' Refrigerating Co., 181 Chambers Street, New York, has awarded contract to the Turner Construction Co., 244 Madison Avenue, for a sixteen-story operating building, 75 x 109 ft., at 17-25 North Moore Street, to include an ice and refrigerating plant, estimated to cost $410,000. John B. Snook Sons, 52 Vesey Street, are, architects.

The F. E. O. Corporation, 67 William Street, East Orange, N. J., will begin the erection of a two-story automobile service and repair building, 70 x 250 ft., at Spring and North Willow Streets, Montclair, N. J., for company occupancy, estimated to cost $125,000 with equipment. Frank P. Oxele is general manager.

The National Fireproofing Co., Perth Amboy, N. J., plans the construction of a machine shop, to replace two such shops to be taken over by the State Highway Commission in connection with property to be used for a right-of-way for a new bridge over the Raritan River.

The Central Foundry Co., 51 Lockwood Street, Newark, N. J., will build a one-story addition to its cast iron pipe foundry, estimated to cost $28,000.

The Newark Light & Fixture Co., 282 Market Street, Newark, manufacturer of electric and gas fixtures, has leased the four-story building at 254 Market Street for a new plant.

The Board of Education, Center Moriches, L. I., is planning the installation of a manual training department in the proposed high school, estimated to cost $160,000, for which plans are being prepared by Louis Inglee, Broadway, Amityville, L. I., architect.

The Automatic Roving Check Co., Inc., Amsterdam, N. Y., recently organized, will manufacture an automatic roving check, under contract. Dies are being made and a considerable amount of flat rolled steel and round bars will be needed.

The Riverside Steel Casting Co., Newark, N. J., is in the market for a tumbling barrel, approximately 48 x 66 in., with or without exhauster.

The Seif Loading Trucking Co., 503 Cumberland Street, Westfield, N. J., has been incorporated with $125,000 capital stock to manufacture truck devices for industrial service. The product is still in the experimental stage, but as soon as completed, plans will be made to manufacture by contract. Edward Hollberg is president.

The Driver-Harris Co., Harrison, N. J., is inquiring for a used Moore or Heroult electric furnace, of 1000 lb. to 1 ton capacity, with automatic control to operate on a 2200-volt, 60-cycle current.

M. Kamenstein, 135 Pearl Street, Brooklyn, is in the market for a No. 4 toggle or cam press. It will also consider a press a little larger or smaller.

Export Opportunity

The Commercial and Industrial Co., Post Box Nr. 79, Riga, Latvia, is desirous of representing American manufacturers of machinery of every description, tools, metals, agricultural implements and other products. It asks that American manufacturers needing representation in Latvia, Eesti, Lithuania and Russia send catalogs and price lists with proposals for sole representation and full particulars regarding terms of payment, discount, etc. The Commercial and Industrial Company will buy for its own account, and will also work on a commission basis.

Philadelphia

PHILADELPHIA, April 7.

CONTRACT has been let to Henry E. Baton, 1713 Sansom Street, Philadelphia, by the Rapid Transit Construction Co., a subsidiary of the Philadelphia Rapid Transit Co., 810 Dauphin Street, for a car house and shop, to cost $125,000.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, is having plans drawn for a steam-operated electric generating plant on the Delaware River, with initial capacity of 650,000 kw., estimated to cost $700,000, including equipment.

Bids are being taken by the Bureau of Yards and Docks, Navy Department, Washington, until April 15, for an addition to the naval aircraft manufacturing and repair plant at Philadelphia.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received an inquiry from a company at Madras, India, in the market for machinery to manufacture talking machines, parts, needles, etc., No. 42130.

The General Electric Co., Schenectady, N. Y., is taking bids on a general contract until April 14, for another addition to its plant at Philadelphia, to cost $100,000 with equipment. Harris & Richards, Drexel Building, Philadelphia, are architects. Local offices of the company are in the Witherspoon Building.

Elevating machinery, from four to six conveyor systems, electric power equipment and other apparatus will be installed on the new pier and grain elevator to be erected by the Philadelphia & Reading Railroad Co., Philadelphia, at Port Richmond, estimated to cost $3,500,000. Work will begin in June. Frederick Jasperson is company engineer in charge.

A. D. Wiler, 258-66 North Clarion Street, Philadelphia, has awarded contract to Harry G. Walters, 412 North Fortieth Street, for a one-story machine shop to occupy the site noted.

Fire, April 2, destroyed a portion of the grey iron department of the Trenton Malleable Iron Co., New York and Ferrier Avenues, Trenton, N. J., with loss reported at $22,000. It is planned to rebuild immediately.

The Susquehanna Water & Power Co., Peach Bottom, Pa., recently organized to take over and consolidate the Peach Bottom Township, Fulton Township, Lower Chanceford Township, Susquehanna and Martic Township Water Power companies, has plans under way for a hydroelectric generating station on the Susquehanna River, to cost $400,000.

The Delaware County Electric Co., Chester, Pa., a subsidiary of the Philadelphia Electric Co., Philadelphia, has plans for a one-story automatic power substation on Sixth Street, 60 x 135 ft., to cost about $325,000 with machinery. John T. Windrim, Commonwealth Building, Philadelphia, is architect.

The Buch Sash Weight Co., Lebanon, Pa., recently organized, is said to be perfecting plans for a foundry to manufacture sash weights and other rough iron castings. Dr. H. M. Vastine, Lebanon, is one of the heads of the company.

The Lehigh & New England Railroad Co., 437 Chestnut Street, Philadelphia, has authorized the construction of a locomotive repair shop, engine house and machine shops at its new classification yard in the Panther Creek Valley, near Tamaqua, Pa., to cost $100,000 with equipment.

Manual training equipment will be installed in the new two-story and basement high school to be erected at Forty Fort, Pa., estimated to cost $300,000, for which bids have been asked on a general contract. R. M. Herr, Simon Long Building, Wilkes-Barre, Pa., is architect.

Enos R. Miller, 14 North Charlotte Street, Lancaster, Pa., is having plans completed for a one-story automobile service and repair building, 75 x 150 ft., to cost $50,000 including equipment. William P. Erisman, Woolworth Building, is architect.

The Watts Water & Power Co., Harrisburg, Pa., is perfecting plans for a hydroelectric generating station on the Juniata River, near Newport, Pa., to cost $350,000.

The Borough Council, Elizabethtown, Pa., plans the installation of electric-operated pumping equipment in connection with its proposed sewerage disposal plant and system, for which bids are being asked on a general contract until April 15. F. H. Shaw, C. E., 53 North Duke Street, Lancaster, Pa., is engineer; Fuller & McClintock, 1001 Chestnut Street, Philadelphia, are consulting engineers.

Edward W. Peters, 103 Lower Mulberry Street, Danville, Pa., has inquiries out for a power-operated bending brake, to handle steel plates, about ¼-in. stock, up to 12 and 14 ft. long.

James W. Boyle, Freeland, Pa., will soon begin the erection of a new mechanical coal washery plant at Harleigh, Pa., to cost $50,000 with equipment.

St. Louis

ST. LOUIS, April 7.

BIDS will be received by the Board of City Commissioners, Fredonia, Kan., until April 14 for a municipal electric power plant and system, including two 300 hp. Diesel oil engines, generators, switchboard, and auxiliary equipment. Plans and specifications on file at the office of Arthur L. Mullergren, 555 Gates Building, Kansas City, Mo.

The Rogers Foundry & Mfg. Co., Joplin, Mo., has acquired the plant and property of the Joplin Steel & Malleable Co., Railroad and Third Streets, and will operate at this location. Plans are under way for extensions and the installation of additional equipment. John A. Rogers is president.

The Conser Laundry Co., 908 St. Francis Street, St. Joseph, Mo., plans the construction of a power house at its proposed one and two-story plant at Buchanan and Seventeenth streets, estimated to cost $165,000 with quipment.

The Norton Co., Worcester, Mass., manufacturer of abrasive materials, etc., will operate a branch plant at Bauxite, Ark., for the production of raw materials for grindstone manufacture. Motors and other power equipment will be installed in addition to general machinery.

The Coleman Lamp Co., 220 North St. Francis Street, Wichita, Kan., manufacturer of electric lamps, etc., has awarded a general contract to John M. Denny, 1451 North Lawrence Avenue, for its two-story and basement plant, 60 x 90 ft., to cost $65,000.

The Wichita Water Co., Wichita, Kan., is disposing of a bond issue totaling $1,400,000, a portion of the proceeds to be used for extensions in waterworks plants, including the installation of pumping machinery and auxiliary equipment.

The Federal Mining & Smelting Co., 120 Broadway, New York, a Guggenheim interest, has acquired about 400 acres

The Crane Market

Foremost among inquiries for electric overhead traveling cranes seem to be the lists for railroads and from engineers with railroad or large industrial contracts. Stone & Webster, Boston, are reported to be accepting bids on a bucket crane for the Indiana Electric & Mfg. Co., Macksville, Ind., and Dwight P. Robinson & Co., New York, have inquired for a 2 or 3-cu. yd., 4-motor, bucket handling crane for the Mississippi Glass Co., 220 Fifth Avenue, New York, erecting a plant in St. Louis, Mo. Dwight P. Robinson & Co. have also been accepting bids on a 100-ton overhead traveling crane for the Los Angeles Gas & Electric Co., Los Angeles, Cal. The General Electric Co., Schenectady, N. Y., is in the market for a 15-ton, 38-ft. span hand power crane for West Philadelphia. The Foundation Co., 120 Liberty Street, New York, is accepting quotations on a preliminary inquiry for cranes for the Southern Railway Co., Knoxville, Tenn., yard, including a 10-ton overhead crane, 10-ton radial crane and a 3-ton bucket handling crane. The General Engineering & Management Corporation, 165 Broadway, New York, is in the market for a 2½-ton hoist, electric or hand power not decided. C. H. Tenny, Salem, Mass., is expected to award contract within a week on a coal handling terminal in that city.

Among recent purchases are:

General Engineering & Management Corporation, 165 Broadway, New York, a 30-ton overhead traveling crane, from the Whiting Corporation.

General Electric Co., Schenectady, N. Y., two 10-ton, 18-ft., 6-in. span and one 10-ton, 14-ft., 6-in. span electric cranes for Pittsfield, from an eastern builder.

Stone & Webster, Boston, Mass., a 30-ton, overhead traveling crane for the Montaup Electric Co., from the Whiting Corporation.

Russell, Burdsall & Ward, Portchester, N. Y., a 2-ton single I beam crane, reported to have been placed with the Pawling & Harnischfeger Co.

J. L. Mott & Co., Trenton, N. J., a 10-ton, 31-ft. 9-in. span, 3-motor overhead traveling crane, from the Pawling & Harnischfeger Co., and four 2-ton, hand power jib cranes, from the Chisholm-Moore Mfg. Co.

A. R. Purdy Co., New York, a 3-ton, 23-ft. 4-in. span, 1-motor overhead crane, from Alfred Box & Co.

Charles B. Hawley & Co., Philadelphia, a 50-ton, 36-ft. span electric crane, from an unnamed builder.

Wolff Mfg. Co., Quincy, Ill., a 5-ton, 28-ft. span crane, from the Whiting Corporation.

Southern Railway, Washington, D. C., a 250-ton transfer table for the Findley shops, from the Whiting Corporation.

Norfolk & Western Railroad, Roanoke, Va., a 10-ton, 69-ft. span, 3-motor overhead crane, from the Whiting Corporation.

Illinois Car & Mfg. Co., Hammond, Ind., a 5-ton, 55-ft. 4-in. span overhead crane, from the Whiting Corporation.

City of Chicago, a 6-ton, 3-motor overhead traveling crane, from the Whiting Corporation.

Jones & Laughlin Steel Corporation, a 2-ton, 31-ft. span, 3-motor, single I beam crane, from the Shepard Electric Crane & Hoist Co.

Merchants Despatch Transportation Co., Rochester, N. Y. a 27½-ton, 50-ft. boom locomotive crane, equipped for bucket, from the Industrial Works.

Fort Pitt Bridge Works, Pittsburgh, a 35-ton locomotive crane with boom extending to 110 ft., from the Industrial Works.

Harris Structural Co., Steelton, Pa., a 15-ton used Ohio locomotive crane, from Philip T. King, New York.

Sanford & Brooks, Baltimore, Md., two crawl tread locomotive cranes, from the McMyler Interstate Co.

New York Central & Hudson River Railroad, New York, a car tipper for Ashtabula, Ohio, from the McMyler Interstate Co.

Blaw-Knox Co., Pittsburgh, a 40-ton electric traveling crane, from the Whiting Corporation.

Kewanee Boiler Co., Kewanee, Ill., a 20-ton electric traveling crane, from the Whiting Corporation.

Libby-Owens Sheet Glass Co., Toledo, Ohio, two 10-ton electric traveling cranes, from the Northern Engineering Works.

Gillette Safety Razor Co., Boston, a 30-ton overhead traveling crane, from the Northern Engineering Works.

Niagara, Lockport & Ontario Power Co., Buffalo, a 30-ton, 33-ft. span crane, from the Milwaukee Electric Crane & Mfg. Co.

Bids will be received by the Electric Power Board, Auckland, New Zealand, until June 23 for a five-ton electric traveling crane.

in the Missouri-Kansas and Oklahoma mining district, for $1,500,000. Plans are under way for the installation of electric power and mining machinery.

The Common Council, Kennett, Mo., is considering the installation of electric-operated pumping machinery in connection with proposed extensions in the municipal waterworks and sewerage system, estimated to cost $35,000.

Manual training equipment will be installed in the two-story and basement high school to be erected at Edmond, Okla., estimated to cost $100,000, for which bids will soon be asked on a general contract. Sorey & Valberg, 212½ East First Street, Oklahoma City, Okla., are architects.

The Kansas Public Service Co., Topeka, Kan., has been organized to take over the Topeka Railway & Light Co., Topeka Edison Co., and the Topeka Railway Co., all of Topeka; the Atchison Railway, Light & Power Co., Atchison, Kan., and the Wichita Railway & Light Co., Wichita, Kan. The new company will have aggregate assets of $13,000,000, and is perfecting plans for extensions in generating plants and system, with the installation of additional equipment. The Kansas Power & Light Co., Tecumseh, Kan., will also be affiliated with the new organization, and will build a steam-operated electric generating plant to cost $750,000 with machinery.

The Fore Piston Ring Mfg. Co., Morrison, Mo., recently organized, has plans for the establishment of a factory to manufacture piston rings and kindred products for automobile and stationary engines, to cost $25,000. George F. Freechmann, Morrison, heads the company.

Manual training equipment will be installed in the three-story high school to be erected at Guthrie, Okla., estimated to cost $190,000, for which bids are being asked on a general contract until April 21. Hawk & Parr, Oklahoma City, Okla., are architects.

The Breslin Boiler & Iron Works, Fort Smith, Ark., is in the market for a power brake for bending No. 12 to ¼ in. plates.

Fire, which recently gutted the plant of the Great Western Mfg. Co., at Leavenworth, Kan., manufacturer of flour milling machinery and equipment, entailed a loss of over $100,000 to machinery and equipment.

The Mid-Continent Oil Lease Corporation, 717 Continental Building, Oklahoma City, Okla., is in the market for five miles of 10-in., three miles of 4-in. and five miles of 2-in. cast iron line pipe.

New England

BOSTON, April 7.

NO improvement is noted in the machine tool market. The sale of two Hendey lathes, two Brown & Sharpe grinding machines and a Le Blond cutter, used tools, to a Bridgeport, Conn., firm represents the largest individual order the past week. Other sales have been confined to single machines, mostly used, with the aggregate perhaps a shade under those for the previous week, the majority going to manufacturers in Connecticut and Western Massachusetts. A few new inquiries, mostly for single special production tools, are reported, which just about offset previous inquiries that have been abandoned.

Small tool sales hold up fairly well. The demand for gages is especially good, with railroads and machinery manufacturers leaders in the buying. More or less price cutting on drills, reamers, chucks, cap and set screws is reported by jobbers. One make of direct differential hoists has been advanced 10 per cent.

The Cities Service Refining Co., Braintree, Mass., will make improvements with a view to increasing the daily output of oil from 600,000 to 1,200,000 gal. New equipment is required.

The General Electric Co., Lynn, Mass., has awarded

contract for a one-story, 60 x 280 ft. concrete and steel galvanizing unit, erection to begin at once. Plans are private.

Contract has been awarded by the Rinulai Tile Co., Inc., 264 Atlantic Avenue, Boston, for a three-story, 48 x 105 ft. plant on Carleton Street, Cambridge. R. E. Whitten, 580 Massachusetts Avenue, Cambridge, is the architect.

Bids are being taken by the J. R. Worcester Co., 79 Milk Street, Boston, architects, for a five-story, 66 x 80 ft. sub-station, No. 72, containnig machine rooms, for the Edison Electric Illuminating Co., Boston.

The city of Falmouth, Mass., contemplates the erection of a one-story and basement junior high school to contain a manual training department. J. Robertson Ward, 8 Cornhill, Boston, is the architect. Bids close April 24.

Leland, Gifford & Co., Worcester, Mass., drills has taken over the Putnam Foundry & Machinery Co., Putnam, Conn., boilers, and will operate as the Putnam company. Contract has been awarded for a foundry addition to care for machine tool castings. The plant will continue the manufacture of boilers.

The Water and Light Commissioners, Morrisville, Vt., will receive bids until April 17 for construction of a municipal hydroelectric power plant, including power station, dam, penstock lines, etc. McIntosh & Crandall, Burlington, Vt., are engineers.

J. F. Foster, 294 Washington Street, Boston, dealer in boilers, engines, etc., has inquiries out for an electric-operated shovel, about ¾-yd. capacity, with three-phase, 60-cycle, 220-volt motor.

The Gillette Safety Razor Co., 58 West Second Street, Boston, has filed plans for a one-story addition estimated to cost $30,000, with equipment.

The Lawrence Motor Co., 218 South Broadway, Lawrence, Mass., is planning for the installation of a hacksaw, grinding machine and drill press in its repair department.

J. H. Taylor, 91 Holmes Street, Quincy, Mass., has filed plans for the construction of a one-story foundry, for the production of brass and bronze castings.

The Charles Millar & Son Co., Springfield, Mass., manufacturer of lead pipe, solder, etc., has foundations in progress for an addition two stories and basement, 50 x 100 ft., to cost approximately $60,000, for which a general contract recently was awarded to D. W. Mellen, 293 Bridge Street. Headquarters are at Utica, N. Y.

The Star Auto Radiator Repair Works, 33 Derby Street, Worcester, Mass., is taking bids for a two-story building, 60 x 120 ft., a portion of the structure to be equipped as a general repair plant. Harry L. Meacham, 571 Main Street, is architect. Harry Mandell is head.

Cincinnati

CINCINNATI, April 7.

BOOKINGS of machine tools were fairly numerous the past week, but the market is not as active as it has been in previous weeks. Inquiries are very plentiful, but there is a tendency on the part of buyers to delay purchases. Orders from the automotive industry have fallen off, but there are still a number of good inquiries on which action is expected to be taken shortly. The Ford Motor Co. is understood to have placed a contract for 40 presses, and the Dodge Brothers Co. for 20. The Southern Railway has bought power plant equipment on its recent inquiry and is understood to have placed some machine tools. However, the bulk of the purchasing is expected during the present week and action on the Sante Fe list is also looked for shortly. The Big Four Railroad is continuing its purchases for various shops. Dealers in second-hand machinery report business good.

The Davis Welding & Mfg. Co., Cincinnati, will shortly award contract for the first unit of its new plant at Cumminsville, Cincinnati suburb. The first building will be for tank manufacturing. Eventually activities will be consolidated at the new works, doing away with two plants now operated. The company builds truck chassis and tanks for oil wagons, as well as doing a general welding business. Lockwood, Greene & Co. are engineers for the new plant.

Construction on the new plant of the Sawbrook Steel Castings Co., Sheperd and McWhorter streets, Lockland, Ohio, is progressing rapidly, and operations will probably begin about June 1. Practically all equipment has been purchased. E. L. Brooks is general manager.

The Cincinnati Steel Castings Co., Queen City Avenue, Cincinnati, has commenced the installation of a second electric furnace and is contemplating alterations to its plant to better enable it to handle rapidly increasing business.

The Hocking Glass Co., Lancaster, Ohio, will rebuild its plant, recently destroyed by fire, following the presentation by the Chamber of Commerce of a building as a nucleus. It will also erect a branch plant at Bremen, Ohio.

The Bellaire Enamel Co., Bellaire, Ohio, whose plant was recently destroyed by fire, has taken over the Enterprise plant of the American Stamping & Enameling Co. at Bellaire, and will resume operations at once.

The Portsmouth Stove & Range Co., Portsmouth, Ohio, will erect an addition to house the cleaning and nickel plating departments. It will be of reinforced concrete, three stories. Frank B. Knauss is president of the company.

The Merkel Brothers Co., Cincinnati, manufacturer of plumbing and heating equipment, has awarded a general contract to the Austin Co., Cleveland, for a new plant, consisting of a main three-story unit, 100x320 ft.; two-story pipe works, 100x220 ft., and power house, with coal storage and material-handling equipment, estimated to cost $500,000.

The Mengel Co., Eleventh Street, Louisville, manufacturer of boxes, etc., has authorized the rebuilding of one of the units at its branch mill at Hickman, Ky., to cost $200,000 with equipment. It will be erected by day labor.

The Board of Education, Louisville, is having plans drawn for a manual training high school at Burnett and Pindell avenues. Arthur G. Tafel, Coleman Building, is architect.

The United States Engineer Office, Memphis, Tenn., is taking bids until April 28 for 848,000 lb. wire rope, with galvanized wire strand and staples; 36,000 wire rope clips and 4800 ft. fiber clad rope, circular 24-55.

The Memphis Power & Light Co., Memphis, Tenn., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions and the installation of a 20,000 kw. generating unit and auxiliary equipment at its power plant, on which work has begun. T. H. Tutwiler is president.

The Casparis Ohio Stone Co., Clinton Building, Columbus, Ohio, has purchased the limestone quarry of the Wilmington Stone Co., Melvin, Ohio. Plans are under way for extensions and the installation of additional machinery to cost approximately $50,000.

The Mississippi River Commission, First and Second Districts, Memphis, Tenn., will take bids until April 14 for 12,700 lb. of iron castings, circular 24-54.

Carl G. Walden, 1410 Cowart Street, Chattanooga, Tenn., will install a lathe, drill press, grinder and reboring machine, all motor-driven, in his garage and service station.

Water tube boilers and auxiliary equipment will be purchased by Charles Kennedy, St. Clairsville, Ohio.

Chicago

CHICAGO, April 7.

THE market is exceedingly quiet, fresh inquiries being few and orders confined to scattered purchases of individual machines. Prospective buyers show less inclination to close against their needs and this is particularly true of users of machine tools identified with the automotive industry. A few additional inquiries have been put out by the Atchison, Topeka & Santa Fe. The Elgin, Joliet & Eastern list, mentioned a week ago, is also published in detail. The Chicago Board of Education is inquiring for miscellaneous tools for two technical high schools. The American Bridge Co. has entered the market for a new or second-hand rivet making machine, capacity ⅞-in. or 1-in. rivets. The Kropp Forge Co., Chicago, has ordered from a local dealer a 7-ton steam drop hammer, manufactured by the Chambersburg Engineering Co., Chambersburg, Pa.

Atchison, Topeka & Santa Fe List
(Additions)

One 24-in. Barnes, or equivalent, upright sensitive motor-driven drill press.

One 16-in. x 8-ft. Hendey, or equivalent, heavy duty type geared head tool room belt-driven engine lathe.

Chicago Board of Education
(For Crane Technical High School)

One power shear, No. 6 Long & Alstatter, or equivalent, complete with motor drive and cross cut shears.

One 20-in. Cincinnati-Bickford, or equivalent, 20-in. high speed sliding head gear driven No. 2 self-contained motor-driven drill press.

(For Tilden Technical High School)

One U. S. Electric Co. electric center grinder.

Elgin, Joliet & Eastern

(For Gary)

One motor-driven Fay & Egan 36-in. No. 192 band saw.
One American turning lathe with motor head block to swing 18 in. over bed.
Two motor-driven emery wheels, Ransom Mfg. Co. No. 131, emery wheel, 3 x 16 in., with 1½-in. hole.
One 24-in. motor-driven drill press.

(For Joliet)

One No. 2 Williams, White & Co. eye bender.
One angle shear, capacity 6 x 6 x 1-in. angles.
One 200-ton 4-column 30 in. between columns flanging press complete with motor-driven hydraulic pump.

The Whiting Corporation, Harvey, Ill., has taken the following orders for foundry equipment: One No. 3 cupola for School Commissioners, Indianapolis; one No. 7 cupola for the Hardwick Stove Co., Cleveland, Tenn.; one No. 3 cupola for the Williams Foundry & Machine Works, Cumberland, Md.; two No. 6 cupolas and a 2-ton elevator for the Warren Foundry Co., Warren, Ohio.

The W. F. Hall Printing Co., 466 West Superior Street, Chicago, is having plans prepared by Weiss & Niestadt, 53 West Jackson Boulevard, for a one-story steel-constructed shop, 500 x 700 ft., and a two-story reinforced concrete office building, 100 x 500 ft., at the corner of Diversey Boulevard and Kilpatrick Avenue, to cost $2,000,000.

William Russe & Son, Inc., Park Ridge, Ill., has awarded contract for a one-story automobile salesroom and service station, 100 x 260 ft., on Northwest Highway, to cost $55,000.

Wilson & Co., Forty-first Street and Ashland Avenue, Chicago, has awarded contract for a one-story machine shop, 91 x 100 ft., and a store-room, 41 x 92 ft., at Forty-second Street and South Hermitage Avenue, to cost $18,000.

The Great Atlantic & Pacific Tea Co., 445 West Pershing Road, Chicago, has awarded contract for a four-story warehouse and factory, 105 x 315 ft., at 2622-34 North Crawford Avenue, to cost $600,000.

The Eggers-Schillo Co., 364 North Harding Avenue, Chicago, recently incorporated with $75,000 capital stock, will manufacture ornamental and structural iron in a plant 125 x 168 ft., at the address given. Equipment has been purchased. The officers include E. J. Baldwin, C. S. Schillo, G. Furzer, J. Eggers.

The Decatur Auto Products Co., Charles Street and Illinois Central tracks, Decatur, Ill., recently incorporated with $50,000 capital stock, is an outgrowth of the L. P. Halladay Co., and will manufacture Halladay shock absorbers and other automobile specialties. A plant has been leased and equipment purchased. L. P. Halladay is president.

The General Automotive Mfg. Co., 625 West Jackson Boulevard, Chicago, recently incorporated, will manufacture automobile accessories, including radiator caps, which will be sold by the General Automotive Corporation, 600 West Jackson Boulevard. The company has leased the machinery and equipment formerly owned by Miller & Pardee, Inc., who heretofore manufactured for the General Automotive Corporation. The new company has $25,000 capital stock and its officers are: President, John A. Dewire; vice-president, Charles A. Pardee; treasurer, Howard F. Kingsley; purchasing agent, O. A. Colburg; chairman of the board of directors, Harvey S. Pardee.

The Wagner Malleable Iron Co., Decatur, Ill., is erecting a pattern shop, 31 x 33 ft., to cost $7,000.

E. W. Stratton has awarded contract for a factory to manufacture small automobile parts at Twenty-third Avenue and Twenty-third Street, Moline, Ill., to cost $1,850.

Cramer & Sons, a new firm, have established a machine shop in the former DeWolf furniture factory at Garnett, Kan., and are prepared to do general machine shop work, welding, joint turning, etc.

Bids will be received by A. N. Starkes, mayor, Metropolis, Ill., until April 24, for the construction of a municipal waterworks and extensions in the electric power plant, equipment to include two 300-hp. watertube boilers, coal elevator and conveyor, engine, generator and accessory apparatus, surface condenser, boiler feed pumps, closed type heater, 4 motor-driven centrifugal pumps, one 500-kw. generator unit, uniflow or turbine, 120-ft. water tower with 100,000 gal. capacity steel tank, coal bunker, and auxiliary apparatus. Plans and specifications on file at the office of the W. A. Fuller Co., Railway Exchange Building, St. Louis.

The Chicago Blow Pipe Co., 210 North Clarkson Street, Chicago, is taking bids for a one-story and basement addition estimated to cost $23,000. Z. Erol Smith, 305 East Fifty-fifth Street, is architect.

The Illinois Power & Light Corporation, Illinois Merchants Bank Building, Chicago, is disposing of a bond issue of $5,000,000, a portion of the proceeds to be used for extensions in generating plants and system. Clement Studebaker, Jr., is president.

The Common Council, Luverne, Minn., is planning for extensions and improvements in the municipal electric power plant, to include the installation of a generator unit and auxiliary equipment. D. W. Campbell is city clerk.

The Common Council, Wadena, Minn., is planning for the installation of electric-operated pumping machinery in connection with a proposed waterworks system, estimated to cost $25,000.

The Northern States Power Co., Minneapolis, Minn., is disposing of a bond issue of $6,000,000, a portion of the proceeds to be used for extensions.

Considerable equipment will be required for a new plant to be erected at Moline, Ill., for the Harrington-Seaberg Fire Alarm Telegraph Co. It will be two stories, 70 x 120 ft., estimated to cost $25,000.

Detroit

DETROIT, April 7.

WORK will begin on a one-story machine shop and power house at the plant of the Castile Mining Co., Ramsey, Mich., to cost $110,000 with equipment. A general contract has been let to the Pfeffer Construction Co., Duluth, Minn.

The Ford Motor Co., Detroit, has acquired six acres adjoining its assembling plant at New Orleans, and will erect an addition to double, approximately, the present capacity, estimated to cost $600,000, including equipment. The company is also perfecting plans for additions to its River Rouge works to cost $1,000,000 with machinery.

Manual training equipment will be installed in the three-story high school to be erected at Ypsilanti, Mich., estimated to cost $450,000, for which bids are being asked on a general contract. Smith, Hinchman & Grylls, 800 Marquette Building, Detroit, are architects.

The Kuenz Radiator Co., 156 West Pearl Street, Jackson, Mich., is said to have tentative plans for expansion for greater output of radiators for Ford automobiles. The company recently increased its capital to $40,000.

The General Parts Corporation, Flint, Mich., recently organized, contemplates the establishment of a plant for the manufacture of parts for automobiles and motor trucks which are no longer being produced, including discontinued car models, etc. The new organization is headed by L. H. Bridgman, president, and Frank Lay, secretary, Flint.

The Williamson Lumber Co., Wyandotte, Mich., has plans for the construction of an addition estimated to cost $70,000. Electric-operated equipment will be installed.

The Paige-Detroit Motor Car Co., Fort and McKinstry Streets, Detroit, is disposing of a bond issue of $3,000,000, a portion of the proceeds to be used for extensions. H. M. Jewett is president.

The Common Council, East Haven, Mich., is said to have plans under way for rebuilding the municipal electric lighting plant, recently destroyed by fire. An official estimate of loss has not been announced.

The United Steel & Wire Co., Battle Creek, Mich., has taken over the plant and equipment of the Railway Specialty Co., Atchison, Kan., and will continue operations as a branch factory for the manufacture of wire products. Preliminary plans are under advisement for extensions.

The Miles Mfg. Co., 203 West Michigan Avenue, Ypsilanti, Mich., has been incorporated with $50,000 capital stock to manufacture electrical devices, and is in the market for materials and equipment.

Buffalo

BUFFALO, April 7.

INDICATIONS point to moderate buying of machine tools for the next few weeks. Users are endeavoring to cover their requirements with the least possible investment and the market is spotty. Mostly single used machines are figuring in the business offered of which stocks appear to be large. A local foundry purchased a lathe, power saw, shaper and a drill press for a new shop. Pulp mill machinery for the new mill of the Albany Perforated Wrapping Paper Co. is understood to have been purchased.

Plans are being considered by the Delaware, Lackawanna & Western Railroad Co., Hoboken, N. J., for extensions in its engine house, repair shops and yard at Bing-

hamton, N. Y., estimated to cost $130,000 with equipment. G. F. Ray is chief engineer.

The Binghamton Auto Lamp & Radiator Works, 247 Water Street, Binghamton, N. Y., plans the installation of sheet metal-working machinery, including forming rolls, shears, etc.

Manual training equipment will be installed in the three-story junior high school to be erected at Penn Yan, N. Y., estimated to cost $300,000, for which plans are being prepared by Pierce & Bickford, 120 Luke Street, Elmira, N. Y., architects.

Earl F. Fisher, 152 Fargo Avenue, Buffalo, is planning the establishment of an automobile service and repair shop in existing buildings at Bird and West Avenues, 80 x 140 ft., to include a general machine works.

The Board of Education, Binghamton, N. Y., is considering the installation of a manual training department in the three-story junior high school at Robinson Street and Broad Avenue, estimated to cost $500,000. T. I. Lacey & Sons, Kilmer Building, are architects.

Fire, March 31, destroyed a portion of the six-story building at 37-43 Pearl Street, Buffalo, occupied by the J. J. Bresnahan Co., stationery engineering equipment and plumbing specialties, with loss estimated at $100,000 including equipment.

The Fairport Cold Storage Co., 16 East Avenue, Fairport, N. Y., has tentative plans for a new four-story ice and cold storage plant, to cost $85,000 with equipment. J. Bridges is one of the heads of the company.

The Rome Wire Co., Railroad Street, Rome, N. Y., is perfecting plans for enlargements to accommodate machinery now at the works of the Atlantic Insulated Wire & Cable Co., Stamford, Conn., a subsidiary acquired about two years ago. The Stamford business will be removed to the main Rome factory early in the summer, adding about 200 operatives to the working force.

The Lovejoy Chaplet Co., Inc., Hoosick Falls, N. Y., is considering the installation of additional equipment, including automatic screw machines for brass working.

The Ward-La France Truck Corporation, Elmira, N. Y., which was erroneously stated had been organized as a subsidiary of the American La France Fire Extinguisher Co., has no connection whatever with the latter company and is an entirely separate organization.

The Carborundum Co., Niagara Falls, N. Y., is inquiring for a used hydraulic press with ram 20 to 26 in. pressure 4500 to 6000 lb. and platens 36 in. square or larger.

Pittsburgh

PITTSBURGH, April 7.

MACHINE-TOOL market activities have dwindled considerably the past week and there is less optimism with regard to the early closing of some of the big lists which have come out in the past few weeks. Work only having recently been started in the razing of the buildings to make way for the new machine shop of the Carnegie Steel Co. at Homestead, it is now regarded as improbable that action on the tools for the new shop will come for at least ninety days. The Westinghouse Air Brake Co. appears to be in no hurry to close against the tools which will be required for its new machine shop and foundry. Such equipment in the old plant as can be used in the new one will be retained.

Replacement tool business has diminished and the trade generally regards the past week as the poorest of the year to date. The crane market also reflects a more conservative attitude and activity is lacking in other kinds of equipment.

The Waterhouse Brass Foundry, Wheeling, W. Va., of which Harry Waterhouse is head, has acquired the city railroad barn at Twenty-fifth and Wood Streets and will convert it into a brass foundry.

Buildings of the Sligo plant, Lockhart Iron & Steel Co., Pittsburgh, at Connellsville, Pa., were destroyed by fire April 3. The company is now making a survey of the damage and is not ready to make an announcement as to its plans. Porter Gillespie is superintendent of the Sligo plant.

The Beckwith Machinery Co., 500 Arch Street, Pittsburgh, is considering tentative plans for the construction of a new building on South Diamond Street and the Park Way for extensions. J. S. Beckwith is president.

Manual training equipment will be installed in the new senior and junior high school to be erected at Wilson, Pa., estimated to cost $160,000, for which bids will soon be asked on a general contract. Rasmusson & Wayland, 252 West Forty-sixth Street, New York, are architects.

The Titan Cement Co., Ackerman, near Ridgeley, W. Va., has acquired about 500 acres on the Potomac River for the erection of a new mill to cost approximately $300,000 with equipment. A power house also will be built.

The Consolidated Power & Light Co., Huntington, W. Va., is disposing of a preferred stock issue of $1,000,000, a portion of the proceeds to be used for extensions. Van Horn Ely is president.

The Seward Wire Co., Parkersburg, W. Va., has awarded a general contract to Plate & Vogel, Parkersburg, for an addition to cost $35,000. J. O. Seward is president.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, has awarded a general contract to the Hughes-Foulkrod Co., Stevenson Foster Building, Pittsburgh, for a two and four-story addition to its Homewood works, Lang Avenue, 85 x 232 ft., and 30 x 62 ft., to cost approximately $200,000. B. H. Prack, Keystone Building, is engineer.

The Pennsylvania Railroad Co., Pennsylvania Terminal, Pittsburgh, is reported to be considering plans for a new engine house and repair shops at Franklin, Pa., to cost $90,000, replacing the structures at Oil City, Pa., recently destroyed by fire. The rebuilding at Oil City, as now arranged, will be for temporary use only.

The Dixon Motor Co., 109 West Montgomery Avenue, Pittsburgh, is taking bids for a one-story addition to its service and repair building, 50 x 118 ft., to cost $60,000 with equipment. W. F. Schaefer, 821 Lockhart Street, is architect.

Milwaukee

MILWAUKEE, April 7.

WHILE inquiry is relatively free, machine tool business is slow in coming to a head. Production, however, is running even or somewhat beyond new bookings in most machine shops. Purchases consist of single machines from scattering sources, and the automotive industry still is the best buyer. Manufacturers of woodworking machinery are very busy. The Jenkins Machine Co., Sheboygan, Wis., which is building a foundry and machine shop addition, has booked a large order for equipment for a sash and door factory to be established in Japan.

The Maynard Electric Steel Castings Co., Milwaukee, is placing contracts for an extension to its foundry at Kilbourn Road and Layton Boulevard, which will cost about $50,000. No equipment has been purchased so far, but prospective requirements include an electric furnace of 1½ or 3-ton capacity. Frank Wabiszewski is general manager.

The P. B. Yates Machine Co., Beloit, Wis., manufacturer of woodworking machinery, is converting the greater part of a foundry built three years ago into a machine shop for the production of an electric molder machine, taking wood stock 4x12 in., at the rate of 150 ft. per minute. Orders have been booked from the Ford Motor Co., Studebaker Corporation and other automobile manufacturers and body builders, requiring a capacity output of one complete machine a day. Approximately $100,000 is being invested in machinery for the new shop. C. J. Marshall is chief engineer.

The Modine Mfg. Co., Racine, Wis., manufacturer of automobile, motor truck and tractor radiators and cooling systems, has purchased the factory of the former Racine Hardware Mfg. Co., at Seventeenth and Racine Streets, from the American Seating Co. The Modine company has been occupying 100,000 sq. ft. in a leased building, and will increase its capacity about threefold when its newly acquired plant is remodeled. The property included a four-story factory, foundry, three-story warehouse, and a steam generating plant, with spur tracks to the main lines of the Chicago & North Western and the Chicago, Milwaukee & St. Paul railroads. A. B. Modine is president and general manager.

The Ormsby Auto Equipment Co., 1114 Wells Street, Milwaukee, has purchased the Krueger-Wilson Co. garage and service building at 375-381 Summit Avenue, and on taking possession June 15 intends to start work on an addition costing at least $50,000, which will require considerable shop equipment.

The Line Material Co., South Milwaukee, Wis., manufacturer of supplies and materials for telephone, telegraph and power transmission lines, has broken ground for a two-story brick and mill constructed factory addition, 56 x 185 ft., with steel sidewall and monitor sash. Miscellaneous

equipment is now being purchased. Bentley Brothers, 808 South Pierce Street, are the architects and engineers.

The International Harvester Corporation, 82 Reed Street, Milwaukee, is taking figures on a $60,000 addition to its motor truck sales and service building, to be used mainly for repair shop and general service purposes. Work will begin about April 15. R. B. Hufford is manager of the Milwaukee branch.

The M. & M. Paper Mill Co., Menominee, Mich., will proceed with the erection of a $200,000 addition to its paper manufacturing plant at Erdlitz Street and Ogden Avenue, having been granted acreage by the municipality through a trade in land for a new approach to the Erdlitz Street Bridge across the Menominee River. Plans for the building are now being completed.

C. A. Karlen, Monroe, Wis., has awarded the general contract to Emil Bauman & Co., local builders, for the construction of a $25,000 garage and service station, 40 x 120 ft., part two stories and basement.

The Board of Education, North Milwaukee, Wis., closes bids April 15 on the construction of a new high school, with manual training department, designed by Van Ryn & DeGelleke, architects, 115 Grand Avenue, Milwaukee. The cost is estimated at $200,000 in all.

Alex A. Russell, Paige and Jewett dealer, Janesville, Wis., has started work on a two-story sales and service building, 75x136 ft., to cost $40,000. The machine and repair shop will be allotted about 3,000 sq. ft.

Cleveland

CLEVELAND, April 7.

THE machine-tool market has been very quiet the past week. Sales were confined almost wholly to single machines and no inquiry of any size came out. Business from the automobile industry in the Michigan territory has become very light, although the Ford Motor Co. continues to buy in a limited way. Little demand is expected from this source for some time. The trade is still working on the list of the Libbey-Owens Sheet Glass Co., Toledo, containing nine machines. The Warren Foundry Co., Warren, Ohio, is buying equipment for its new foundry and will require tools for its machine shop which has not yet been purchased.

The demand for good used machinery is holding up well and some plants are taking advantage of this condition and disposing of surplus equipment.

The C. O. Bartlett & Snow Co., Cleveland, manufacturer of conveying and elevating machinery, is having plans prepared for new works at Harvard Avenue, near East Sixty-fourth Street, consisting of a one-story steel frame brick building, with approximately 50,000 sq. ft., and will include structural and machine shops. The company must vacate by Dec. 1 its present plant, which has been acquired by the Union Terminal Co. The Allen-Osborn Co., 701 Rose Building, is the architect.

The Ohio Machine & Boiler Co., Cleveland, will build a one-story, 64x100 ft. addition to its boiler shop. A. G. Simon, 716 Hippodrome Building, is the engineer.

The Cleveland Heater Co., 1900 West 112th Street, Cleveland, will shortly place contract for a one-story factory addition, 100x250 ft. The George S. Rider Co., 612 Century Building, is the engineer.

The Hillwood Mfg. Co., Cleveland, recently organized, is building a plant, 96x150 ft. at 21700 St. Clair Avenue and Bliss Road, for the manufacture of tacks. In addition it will make forgings and do heat treating work. C. K. Hill and others are interested.

The Holorib Co., 876 East Seventy-second Street, Cleveland, has been organized to manufacture sheet metal roofing with the use of a new type of forming machine. Charles T. Pratt is president, J. F. Loucks, vice-president and general manager, and H. C. Pratt, secretary.

The Linndale Reduction Co., Cleveland, has been organized to manufacture brass ingots, casting copper and blister copper. It has acquired the plant of the Parish-Pool Co., which was built in 1920, but not entirely completed and only partially placed in operation. The Linndale company represents a joining of interests of the Koblitz-Cohn Co., a dealer in secondary metals, and the Nichols Copper Co., New York. Julian B. Beaty, vice-president Nichols Co., is president; J. B. Kohn, president Koblitz-Cohn Co., is vice-president, and E. H. Simonson, of the Nichols Co., is secretary and treasurer. The Parish-Pool plant, which was purchased at a sheriff's sale for $112,000, occupies a thirteen-acre site and a factory building 150x437 ft.

The Thomas Sheet Steel Works, Niles, Ohio, will shortly begin revamping its sheet mill. The work will include the electrification of the plant, overhauling of the present equipment and the installation of new equipment. Barton R. Shover, Oliver Building, Pittsburgh, is the consulting engineer.

Electrical pumping and mechanical equipment will be required in connection with a new water filtration plant to be built at Girard, Ohio, estimated to cost $60,000, for which the City Council is in charge.

The County Commissioners, Cuyahoga County, Cleveland, plan to purchase two motor-driven centrifugal pumps, with air compressors, pressure tanks and auxiliary equipment, in connection with improvements to the Mayfield Road sewer pumping station. A. J. Hieber is clerk.

Indiana

INDIANAPOLIS, April 7.

ELECTRIC power equipment, conveying and elevating machinery will be installed in the new plant to be erected by the Acme-Evans Milling Co., Indianapolis, estimated to cost $200,000.

A one-story power house, with 150 ft. high self-supporting steel stack, will be built at the plant of the Real Silk Hosiery Mills, 614 North Noble Street, Indianapolis, in connection with extensions estimated to cost $125,000. Lockwood, Greene & Co., 38 South Dearborn Street, Chicago, are architects and engineers.

P. M. Kramer, Indianapolis, will operate a sheet metal-working shop at 224 West Michigan Street, for the manufacture and repair of automobile radiators and kindred equipment.

The Griffey Mfg. Co., Indianapolis, has arranged for the establishment of a plant at 312 South East Street, to manufacture automobile equipment and accessories.

The Cumberland Hydro-Electric Power Co., 1011 Fletcher Building, Indianapolis, is perfecting plans for a series of hydroelectric power stations on the Cumberland River, vicinity of Burnside and Williamsburg, Ky., to cost $1,000,000 with equipment.

The Becker Motor Co., 201 West Jefferson Street, Fort Wayne, Ind., is having revised plans prepared for a three-story service and repair building, 60x110 ft., to cost $100,000 with equipment. Pohmeyer & Pohmeyer, Central Building, are architects.

The Keynote Mfg. Co., Indianapolis, manufacturer of septic tanks, iceless refrigerators, etc., has acquired buildings and land at Commerce Avenue and the line of the Big Four Railroad, and will remodel for a new plant. It is planned to remove the present business to the new location and install additional equipment. Horace E. Kinney is president.

A. B. Ayres, Fortville, Ind., is in the market for a drilling machine and a portable mounted boiler (oil country style.)

Packing plant machinery, transmission and conveying equipment will be purchased by I. C. Morgan and associates, Scottsburg, Ind., in connection with a packing plant to cost $100,000, to be built at Columbus, Ind.

The Hoosier Tie & Lumber Co., Terre Haute, Ind., is in the market for a 50 hp., 220 volt, three-phase electric motor.

The R. H. Staples Mfg. Co., Mount Vernon, Ind., is in the market for overhead and conveying equipment, to include 16, 18 and 30-in. pulleys.

Mechanical equipment will be required for a new three-story 147x179 ft. building, estimated to cost $60,000, for the Ohio Valley Roofing Co., Pennsylvania and Short Streets, Evansville, Ind. Construction will start early in April.

Refrigerating machinery and conveying equipment will be required by the St. Joseph Ice Co., Elkhart, Ind., to replace that recently destroyed by fire.

Gulf States

BIRMINGHAM, April 7.

A SITE is being selected in the vicinity of Athens, Tex., by the Texas Power & Light Co., Dallas, for a new steam-operated electric generating plant to cost $175,000 with equipment. The company will also make extensions in its transmission system.

The Burton Concrete Products Corporation, Van Waggoner Building, Fort Worth Tex., recently organized with a capital of $70,000, will erect a new plant for the manufacture of concrete pipe, tile and kindred products, to cost

about $45,000, including equipment. L. L. Burton is president and F. H. Scott, secretary.

The Ford Motor Co., Detroit, has asked bids on a general contract for its assembling plant at East Grand and Henderson avenues, East Dallas, Tex. It will consist of a main one-story unit, 301x840 ft., with adjoining structure 65x114 ft. A one-story power plant, 65x70 ft., will also be built. The plant will cost approximately $1,000,000 with machinery. Albert Kahn, 1000 Marquette Building, Detroit, is architect.

The Mumby Ice Co., Jacksonville, Fla., will begin the construction of a one-story ice-manufacturing plant, estimated to cost $50,000 with machinery. James K. Stathis is president.

The Southwestern Power & Light Co., Forth Worth, Tex., is disposing of a bond issue of $3,500,000, a portion of the proceeds to be used for extensions. F. G. Sykes is president.

The Common Council, Floresville, Tex., is planning for the installation of electric-operated pumping equipment in connection with extensions in the municipal waterworks estimated to cost $45,000. The Municipal Engineering Co., Praetorian Building, Dallas, Tex., is engineer.

The Common Council, Fayette, Miss., is preparing plans for extensions in the municipal electric power plant, to include the installation of a 100 hp. engine-generator unit and auxiliary equipment. J. E. Briggs, mayor, is in charge.

The Lake Charles Rice Milling Co., Lake Charles, La., is reported to be perfecting plans for rebuilding the portion of its plant and power house recently destroyed by fire with loss approximating $500,000, including machinery.

The Dixie Metal Products Co., Birmingham, plans the construction of a one-story addition, to be equipped as an enameling works, estimated to cost $25,000. D. D. Bentley is manager.

The El Paso Cotton Mill Co., El Paso, Tex., will build a power house in connection with its proposed plant, estimated to cost $135,000, including equipment. A. P. Coles is president.

Manual training equipment will be installed in the three-story high school to be erected at Bowie, Tex., estimated to cost $110,000, for which bids will be asked soon on a general contract. E. H. Eads, Chickasha, Okla., is architect.

The National Power & Light Co., 71 Broadway, New York, operated by the Electric Bond & Share Co., same address, has acquired the plant and property of the Birmingham Railway, Light & Power Co., Birmingham, at a public sale for $18,500,000. The name will be changed to the Birmingham Electric Co. The new owner plans extensions with the installation of additional equipment.

The W. K. Henderson Iron Works & Supply Co., Shreveport, La., has awarded a general contract to the Leonard Construction Co., 37 South Wabash Avenue, Chicago, for the initial units of a new plant on thirteen acres, recently purchased near the city limits. It will be one-story, equipped for the production of electric steel and other metal castings. The company will maintain operations at its present machine shops and boiler works. Frank D. Chase, Inc., 645 North Michigan Avenue, Chicago, is engineer for the new building. Ward Delaney is vice-president.

H. W. Dexter, Inc., P. O. Box 665, Jacksonville, Fla., machinery dealer, has inquiries out for a stationary engine, plain-valve type, from 350 to 450 hp.

The Oliver H. Van Horn Co., Inc., New Orleans, is reported to have secured options on waterfront property at Baton Rouge, La., as a site for a new shipbuilding plant, primarily for the production of steel hulls for barges and similar river craft. A ship repair department will also be installed. The estimated cost is placed at $90,000.

Electric pumping machinery and equipment will be required in connection with extensions to be made at the municipal waterworks, Tuscaloosa, Ala., estimated to cost $150,000. Morris-Knowles Co., Pittsburgh, are engineers in charge.

The plant and equipment of the Preston Motors Corporation, Birmingham, will be sold at auction April 18 by John S. Coxe, trustee, 9 Potter Building, Birmingham. The property consists of an automobile manufacturing plant and a drop forge plant. The estimated value is $500,000.

Pacific Coast

SAN FRANCISCO, April 2.

PLANS are being prepared by the J. W. Murray Mfg. Co., 1975 Clay Street, Detroit, manufacturer of automobile fenders, for the initial unit of its plant on a 15-acre tract at Oakland, Cal., recently acquired. It will cost in excess of $80,000 with equipment.

The Western Cooperage Co., 1919 Bay Avenue, Los Angeles, has awarded a contract to the Austin Co., for a new plant at Huntington Park, with main unit, one-story, 140 x 220 ft.; power house, 25 x 40 ft., and other structures, estimated to cost $75,000 with machinery.

The Montague Range & Furnace Co., San Francisco, has leased a two-story building to be erected on West Sixth Street to cost $50,000. S. Heiman, 57 Post Street, is architect.

The Common Council, Tillamook, Ore., is considering the installation of electric-operated pumping equipment in connection with extensions in the municipal waterworks estimated to cost $50,000.

The Federal Match Co., Spokane, Wash., has plans for extensions in its plant to more than treble the present output. The work will cost about $150,000, including machinery, of which the majority will be electrically-operated.

The Puget Sound Automobile Co., Oakland, Cal., W. A. King, Bank of Savings Building, representative, has preliminary plans for a new works, with power house, estimated to cost $300,000. It is said that a 5-acre tract of land has been acquired.

The Paraffine Companies, Inc., 40 First Street, San Francisco, manufacturer of paper products, has awarded a general contract to Fred Stamm, Antioch, Cal., for a one-story addition, 220 x 300 ft., to its Antioch plant, estimated to cost $60,000. The company has arranged for a bond issue of $750,000, practically the entire proceeds to be used for plant extensions in connection with an expansion program.

The Disappearing Screen & Shade Co., Oakland, Cal., has arranged for the operation of a plant at Fiftieth Avenue and East Eighth Street, for the manufacture of flexible wire screens. H. W. Valentine is president.

The Clover Valley Lumber Co., Loyalton, Cal., is planning for enlargements, and the installation of additional equipment, including electric traveling crane. The company also purposes to construct a logging railroad, about 8 miles, and will purchase rolling stock and equipment

The Portland Railway, Light & Power Co., Portland, Ore., is arranging for a preferred stock isue of $7,500,000, a portion of the proceeds to be used for extensions in generating plants and system. A change of name will be made to the Portland Electric Power Co.

The Pacific Car & Foundry Co., Seattle, recently organized to take over the company of the same name, with offices in the Alaska Building, and plants at Renton, Wash., and Portland, Ore., is said to have tentative plans for extensions, and the installation of additional equipment. The new company is understood to be affiliated with the American Car & Foundry Co., 165 Broadway, New York. John Twohy is president, and L. T. Carroll, secretary.

The Mount Shasta Silica Co., Weed, Cal., organized with a capital of $300,000, has plans for the erection of new works near Bartle, vicinity of Sisson, Cal., for the production of silica and other kindred products. A mechanical air process system will be installed. The plant will have a capacity of 100 tons per day, and will cost $150,000, including power house and other departments.

The C. F. Bulotti Machinery Co., San Francisco, is inquiring for a 36, 42 or 48-in. Newton rotary planer, motor drive.

South Atlantic States

BALTIMORE, April 7.

THE White Motor Truck Co., Ostend and Leadenhall Streets, Baltimore, has leased a one-story building, 200 x 200 ft., to be erected on Twenty-fifth Street, estimated to cost $100,000, for a new service and repair plant. It will be owned by Robert Seff, 231 Courtland Street. Work will begin at once.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until April 29 for a quantity of wire rope for Eastern and Western yards, schedule 2055.

The Common Council, Farmville, N. C., will receive bids until April 29 for extensions in the municipal electric power plant, including a 250-kw. uniflow engine-generator unit, surface condenser, vacuum and circulating pumping equipment, spray equipment for cooling condensing water, switchboard, and auxiliary equipment. William C. Olsen, Raleigh, N. C., is consulting engineer.

M. Leland Henry, Evans Building, Washington, has inquiries out for portable coal-loading machinery.

E. P. Martin, Blakely, Ga., has inquiries out for a Corliss engine and boiler, with accessory equipment, for a local sawmill.

Ellis, Sparks & Sprinkle, Marion, Va., are planning the purchase of a stone crusher, with capacity of about 15 tons per hr., second hand, in good condition.

The Automotive Sales, Inc. of North Carolina, Asheville, has awarded a general contract to T. C. Coxe, Asheville, for a two-story service and repair works, 125 x 165 ft., to cost approximately $90,000 with equipment. The company was formed recently with a capital of $100,000. Charles W. Leland is president.

The general purchasing officer, Panama Canal, Washington, will take bids until April 18 for 5 electric motors, 1500 ft. power cable, 205,000 ft. rubber insulated wire, 500 ft. magnet wire, 500 lin. ft. copper netting, 12,500 ft. deck cable, and other material, circular 1600; until April 29 for reamers, files, taps, vises, wrenches, hacksaw blades, chain, cable reel, trailers, steel and manila rope, iron and steel pipe, brass, copper and steel tubing, and other equipment, circular 1602.

The Cambridge Brick Co., Cambridge, Md., is in the market for a conveyor system, gravity type, with steel frame, suitable for handling standard brick.

The Board of City Commissioners, Lucama, N. C., is planning the installation of a municipal electric power plant. A bond issue will be arranged.

The Pennsylvania Water & Power Co., Lexington Building, Baltimore, has construction in progress on an addition to its plant at Holtwood, Pa., including the installation of hydroelectric power equipment, estimated to cost $2,000,000.

D. C. Elphinstone, Continental Building, Baltimore, machinery dealer, has inquiries out for a steam condenser, with 40-ft. tank; also for a 36-in. gage portable track.

The Crystal Ice & Fuel Co., Goldsboro, N. C., recently organized with a capital of $100,000, is arranging for the erection of a one-story ice-manufacturing plant to cost $75,000. W. L. Rawlings heads the company.

The chief of air service, United States Army, Washington, will receive bids until April 21 for 150 aircraft propellers, 2 blades; and 25 impellers for 600-watt generator, 4 blades, circular CAS 24-102; until April 14 for aircraft ignition and electric accessories and supplies, circular CAS 24-90.

The Shawsville Power & Light Co., Shawsville, Va., recently organized, will begin the construction of an electric power plant and system for commercial service. G. W. Gardner is president, and J. R. Sisson, secretary.

The Emrick-Chevrolet Sales Corporation, Richmond, Va., local representative for the Chevrolet automobile, has leased a three-story building to be erected for a new service and repair works, estimated to cost $85,000. H. T. Barnum, Richmond, Va., is architect.

The Virginia Railway & Power Co., Richmond, Va., is developing plans for an extension and improvement program to cost $1,000,000, including additions to electric power plants and system, and the installation of new equipment. Thomas S. Wheelwright is president.

The Hackley-Morrison Co., Inc., 1708 Lewis Street, Richmond, Va., machinery dealer, is in the market for a locomotive type boiler, about 35 hp. and accessory equipment.

Canada

TORONTO, April, 7.

WHILE inquiry continues good, demand for machine tools has been confined almost entirely to small lot buying the past few days. Buyers are prepared to enter the market for replacement purposes, but in many cases purchasers are unwilling to buy new tools unless they can trade in their worn out and obsolete equipment. The demand for waterworks equipment, sewage and electric plants is one of the chief features. Several orders for two or three tools were booked from the automotive industry during the week.

R. A. Thompson, Lynden, Ont., is in the market for a 10 hp., 750 r.p.m., three phase, 25-cycle, 550-volt motor.

Walker Brothers, Thorold, Ont., are in the market for a new or second-hand gas or steam stationary engine, about 25 hp.

The Public Utilities Commission, London, Ont., will spend $80,000 on new equipment for a pumping plant, and is receiving prices on a Diesel engine and electric generators.

J. J. Marsh, chairman, Waterworks Department, Smith's Falls, Ont., will purchase two 1700 Imperial gal. per min. low-head pumps; 15,000 Imperial gal. elevated tank; penstock and bulkhead, etc.

The Oxford Foundry & Machine Co., Oxford, N. S., has awarded contract to Doncaster Brothers, Amherst, N. S., for the erection of a new foundry to replace that recently destroyed by fire.

Henry Disston & Sons, 2 Fraser Avenue, Toronto, manufacturers of saws, machine knives, etc., will build an addition to their plant to cost $15,000.

R. W. Sargeant, Lanark, Ont., is in the market for a drill press and lathe.

W. W. Hiltz, chairman of the Board of Control, Toronto, is in the market for a 25,000,000 Imperial gal. centrifugal pump and steam turbine.

A. Cushing, Milford, N. B., is in the market for complete sawmill equipment.

Beatty Brothers, Ltd., Fergus, Ont., manufacturer of washing machines, pumps, etc., is in the market for equipment. W. G. Beatty is purchasing agent.

The Great Lakes Paper Co., Fort William, Ont., is having plans prepared for the erection of a mill to cost $2,500,000. J. H. Black, Toronto, is president of the company.

The National Refrigerating Machine Co., Montreal, is in the market for equipment for a new plant and is receiving prices and information. M. Shulman, 83 Craig Street West, is purchasing agent.

The Farlinger Co., Sioux Lookout, Ont., is having plans prepared for the erection of a pulp mill and will develop waterpower on the English River.

Western Canada

The Empire Box Co., False Creek, B. C., has completed its factory and begun operations. At present it is buying raw material in the open market, but propcses to start work shortly on the erection of a large sawmill on the north arm of the Fraser River.

The Elk Creek Waterworks Co., Ltd., Chilliwack, B. C., is having plans prepared for additions to the waterworks plant and system to cost $20,000.

J. C. Milligen, Lesson & Lineham Block, Coleman, Alta., is receiving bids for the construction of an electric power plant and system to cost $23,000 for the International Coal & Coke Co., Coleman, Alta. No closing date set.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	42¼	44⅛	Int. Har.	83	86
Am. B. S. & Fdy.	79	79⅞	Int. Har. pf.....	106½	106½
Am. Can 103		106⅝	Jones & L'hlin pf.	110	110
Am. Can pf.....112	⅛	112¾	Lima Loco.	60¼	62
Am. Car & Fdy.	156	159	Nat.-Acme	8⅞	9
Am. Locomotive.	117	117	Nat. En. & Stm..	30½	31⅞
Am. Radiator ..102	½	104⅝	N. Y. Air Brake..	38½	40
Am. Stl. Fdries..	35¼	36¼	Nova Scotia Stl..	12½	12½
Am. Stl. Fd. pf..102	¼	104	Otis Steel	9¼	9⅞
Bald. Loco. 115	⅛	118⅝	Otis Steel pf....	63	64
Beth. Steel	49	52⅝	Pressed Stl. Car.	49⅝	50½
Beth. Stl. 7% pf.	94	94½	Pressed Stl. pf..	84	84
Beth. Stl. 8% pf.	107¼	107⅝	Replogle Steel ..	9	9½
Br. Em. Steel...	2½	2½	Republic	44¼	48¾
Br. Em. Stl. 1 pf.	40	41	Sloss-Sheffield ..	56	58⅞
Br. Em. Stl. 2 pf.	9¼	9½	Steel of Canada.	78	79½
Chic. Pneu. Tool	83¼	84½	Un. Alloy Steel..	27	27¼
Colo. Fuel	29½	32½	U. S. Pipe.....	73	77⅝
Crucible Steel ..	54⅛	57⅞	U. S. Steel.....	97½	100⅝
Deere pf.	67	67	U. S. Steel pf...119		119½
Gen. Electric ...213	¾	223¼	Vanadium Steel.	24¾	26¼
Gt. No. Ore Cert.	29⅝	31⅜	Va. I., C. & C. pf.	77	77
Gulf States Steel	71⅝	75	W'house Air Br..	89½	91
Gulf St. Stl. pf..100	½	100½	Y'gstown S. & T.	66	66⅛
Inland Steel	34	35⅝			

Cleveland-Cliffs Iron Co. Earnings

The Cleveland-Cliffs Iron Co., Cleveland, increased net earnings $2,211,372 in 1923 over 1922 as shown by the annual statement. Net profits applicable to surplus were $3,092,114 or about $8 a share on 400,000 shares of no par common stock, compared with $880,742 the previous year. After paying $800,000 in dividends, $2,292,114 was transferred to surplus, which at the end of the year amounted to $22,246,022. The resources were increased $4,166,520. In the statement to the stock holders, President W. G. Mather said that the excellent profits were due mainly to the iron mines and lake vessels, but he called attention to other resources which are expected later to increase earnings. These include the large stock interest in the Otis Steel Co. which has completed large additions to its plant; interest in the Trumbull-Cliffs Furnace Co., which have its by-products coke ovens in operation by July 1; the Lake Superior & Ishpeming Railroad Co., which he states has now begun to make substantial dividends, and interest in the Central Steel Co., which shortly will begin the erection of a blast furnace and coke ovens. This furnace will annually consume 400,000 tons of the Cleveland-Cliffs iron ore. The Cleveland-Cliffs company owns one-third interest in the common stock of the Central Steel Co.

Earnings of Industrial Companies

The M. A. Hanna Co., Cleveland, in its annual report for 1923 shows net earnings of $2,062,263 after deductions for interest, depreciation and Federal taxes. Dividend requirements on first preferred stock were approximately $820,000. The company purchased during the year and

holds in the treasury $380,000 of this stock which reduced the amount outstanding to $11,620,000. Current assets Dec. 1 amounted to $17,316,889 and current liabilities $5,241,020. The statement shows total assets of $49,480,459, after allowing for depreciation and depression of over $10,000,000.

According to Howard Coonley, president, Walworth Mfg. Co., Boston, incoming orders have exceeded the capacity of the plant so far this year, and indications are that the gross income of the company for 1924 will be as large as it was in 1923, when the aggregate was $18,500,000. Business last year was the best in the 82 years of its existence. The company has plans for extending operations in the South, conditions at Birmingham, Ala., being under observation. The company also has under consideration the establishment of a steel plant to manufacture its own steel and a department for the manufacture of tools and hardware as well.

Business of the General Electric Co. has shown a falling off in recent weeks, a reflex of the general business situation. Bookings of new orders for the three months ending March 31 are estimated at $66,000,000, which compares with $80,010,045 for the corresponding quarter last year and $74,452,442 for the last quarter of 1923. In January, this year, bookings aggregated $25,000,000. Current operations are at the rate of 75 per cent of capacity, contrasted with 93 per cent during the last four months of 1923. As the corporation began 1924 with approximately $100,000,000 unfilled orders, there apparently was something like $166,000,000 of orders to work on during January, February and March.

The Canadian General Electric Co., Ltd., held its first annual meeting in Toronto, March 26, since coming under the control of the General Electric Co., Schenectady, N. Y. The financial report presented at the meeting shows profits of the Canadian company for the year ending December 31, 1923, before depreciation and interest charges of $1,482,234, compared with $532,791 for 1922. Net profits for the year amounted to $678,083, as against $101,564 in 1922.

While reporting a record volume of business for 1923, the General Motors Corporation, showed profits below those of 1920 and 1919. Net sales aggregated $698,038,947 against $463,706,733 in 1922. Net income available for dividends was $62,067,526. A large slice was cut from profits by the company's policy of re-alinement of products to eliminate competition between the car manufacturing divisions.

The Superior Steel Corporation, Pittsburgh, has resumed dividend payments on common stock, directors having declared a quarterly dividend of 75 cents a share payable May 1, to stockholders of record April 15. The last previous common stock dividend was paid Aug. 1, 1921. Resumption of dividends reflects not only favorable earnings in 1923 but also a change in the financial structure of the company, whereby $3,265,600 first preferred and second preferred stock, each class calling for 8 per cent dividends, were retired through the sale of 40,000 shares of common stock and an issue of $2,750,000, first mortgage 6 per cent bonds. Capital of the company now is $10,000,000, all of common stock, and $2,750,000 of bonds. Report of the company for the year ended Dec. 31, 1923, showed net profits of $826,835 and other income of $77,731. Surplus as of Dec. 31, 1923, amounted to $803,011, this after deducting dividends on preferred stock of $196,404 and preferred stock sinking fund payments aggregating $165,000.

Industrial Items

Directors of the United Alloy Steel Corporation have reduced the quarterly dividend on common stock from 75 to 50 cents per share, and last week declared the quarterly dividend of $1.75 per share on preferred stock.

O. G. Metzger and D. F. Graham of Coudersport, Pa., have been named receivers for the Supreme Roller-Bearing Co. The industry first started as the Currier-Raymond Co.

A petition in bankruptcy for authority to sell the plant of the H. & H. Foundry & Machine Co., Bridgeport, Conn., has been filed in the Superior Court, that city, by the National Bank of Bridgeport, trustee for a $200,000 bond mortgage covering both the plant and the machinery.

Charles H. Keith, Greenfield, Mass., has been appointed temporary receiver of the Wells Corporation, that city, maker of taps and dies. The appointment was made following the granting of an injunction in a case against F. O. Wells and the Wells Corporation, restraining Mr. Wells from disposing of stock in six corporations.

L. A. Green, First National Bank Building, Pittsburgh, has changed its name to the L. A. Green Railway Equipment Co.

Plans of New Companies

The General Heating Corporation of America, 19 Madison Avenue, New York, has been incorporated with capital stock of $250,000 and will manufacture oil-burning equipment. It plans to manufacture at first by contract and to maintain an assembling plant in New York. However, it will be three or four months before operations are started. S. L. Wentz, E. H. Pryce and H. M. Twitchell, are the incorporators.

The American Industries Engineering Co., 5 Beekman Street, New York, has been incorporated with $100,000 capital stock, and will give service as consulting engineer. Phinehas V. Stephens, who has been active in this line for several years, is the chief incorporator.

The O. B. Fuel Oil Furnace Corporation, 136 Liberty Street, New York, recently incorporated with capital stock of $200,000, will manufacture a new design of oil furnace. Manufacturing will be done by contract, but the company will maintain its own assembling plant. Operations will be started immediately. E. R. Foote, J. R. Biggs and C. H. Chambers are the incorporators.

The Richey-Rhynearson Machinery Co. has been organized by Granville A. Richey, B. H. Rhynearson and Fred Schellenberg, formerly with the Vonnegut Machinery Co., Indianapolis. The company has leased a three-story building at 23-25 East South Street, Indianapolis, and will engage in selling new and rebuilt machine tools.

Bennett Automotive Co., care of the Corporation Trust Co. of Delaware, Dover, Del., has been organized with $500,000 capital stock, and for the present will operate a number of garages. It may engage in manufacturing later.

The Philadelphia Body & Truck Equipment Co., 2123-25 Vine Street, Philadelphia, has been organized as distributor of hydraulic hoists, power winches, combination dump bodies for trucks and special bodies for automobiles. Equipment has been purchased. Louis H. Hein is president; J. Marshall Harlan, Jr., vice-president, and W. E. Coulter, secretary.

The Galt Machine & Screw Co., Ltd., Galt, Ontario, has been organized under a Dominion charter for $500,000, and will take over the business formerly conducted by the company of that name, which will be continued on a larger scale. It will manufacture automatic screw machine products and specialties. Considerable new equipment will be added from time to time. R. W. Roelofson is president; C. E. A. Dowler, vice-president, and C. K. Jansen, secretary-treasurer.

The Oklahoma Radio & Electric Co., 308 West Second Street, Oklahoma City, Okla., has been incorporated with $50,000 capital stock, to succeed the Oklahoma Radio Co., in operation for two years. It will do a wholesale business handling Westinghouse fans, heating appliances, lamps, etc., and also radio equipment. William A. DeBold is secretary.

The Algonac Machine & Boat Works, Algonac, Mich., has been organized to continue the manufacture of marine engines. Operations will be enlarged and plans are being made to convert the present engines into stationary motors for lighting, hoisting and pumping outfits. Larger motors will be added to the line later. Some time ago the company acquired the manufacturing rights of the Hess Motor Co., Detroit, and the Gierhoitt Gas Motor Co., Marine City, Mich.

The Hartman-Tidd Hardware Co., Alexandria Bay, N. Y., recently incorporated with $30,000 capital stock, will continue a business established for some time in general hardware and plumbing.

The Higgins-Bothwell Co., 1737-39 Dime Bank Building, Detroit, has been incorporated with $100,000 capital stock, all subscribed, for warehousing cold finished steels. It purposes to locate a warehouse in Detroit if possible, and to stock cold finished steel, particularly cold drawn steel. Other lines will be added later. Dean Higgins of the Dean Higgins Co., Toledo and Detroit, is president; Walter J. Bothwell, for 20 years with the Union Drawn Steel Co., Beaver Falls, Pa., is vice-president; Wayne W. Wilson, metallurgical engineer, Youngstown Sheet & Tube Co., and for the last five years with the Union Drawn Steel Co., is secretary, and John T. Ferris, treasurer.

The American Pattern & Mfg. Co., 1551 West Market Street, York, Pa., has been organized to continue a business in the manufacture of metal patterns, aluminum match plates and pattern equipment for molding machines. It maintains an equipment department as jobber and district representative for the Standard Fuel Engineering Co., Detroit, maker of heating furnaces; Canton Pneumatic Co., Canton, Ohio, maker of pneumatic tools and air equipment; Weldit Acetylene Co., Detroit. The company's plant is in full operation. M. Haller Frey, is one of the heads.

The Frontier Roofing Corporation, 862 Bramson Building, Buffalo, has been organized as contractor of Beaver vulcanite

roofings. H. B. Clifford of the H. B. Clifford Roofing Co., a Michigan corporation, is president of the new concern.

The Irrigation & Drainage Tile Co., Inc., Ithaca, N. Y., has been incorporated with $400,000 capital stock, to manufacture drainage tile. Organization plans are still being developed, hence no definite working plans have been made. Temporary address is in care of Cobb & Cobb, attorneys, Savings Bank Building, Ithaca.

The Auto Comfort Accessories Co., Princeton, W. Va., has been organized as successor to the Nurvie Mfg. Co., maker of household specialties.

The Hoisting & Portable Excavators, Inc., Portland, Ore., has been organized by steam and operating engineers with a view to furnishing contractors with skilled operators and contractors' machinery. One steam shovel has been purchased and put to work. Address is in care of William P. Lord, 1107 Spalding Building.

The Dilg-Fleet Mfg. Co., 27 East 125th Street, New York, recently incorporated with capital stock of $100,000, will manufacture small motors and grinders for hotel use. Castings are made outside, but the company maintains a shop for most of the work. It will continue and expand the business of the Dilg Mfg. & Trading Corporation. R. S. Fleet is active head.

The Liquid Overflow Preventer, Inc., care of Isaac Shorr, 799 Broadway, New York, has been incorporated with $100,000 capital stock, and will manufacture oil burning devices. Dies will be required and as soon as a plant can be found, equipment will be required. No contracts have been placed as yet, organization details not being completed. Among the incorporators are J. R. Brodsky and I. Shorr.

The Pacific Malleable Castings Co., Eighty-fifth Avenue and Southern Pacific Tracks, Oakland, Cal., has formed an organization with capital stock of $500,000, to manufacture castings for the automobile manufacturers in that region. A plot of land has been bought, and work will soon begin on a foundry. H. H. Whiting, president, Best Steel Castings Co., Oakland, is one of the principals in the new venture.

The Bond Service & Repair Corporation, 42 Bond Street, New York, has been organized to manufacture electric specialties, including motors, transformers, boilers, engines, compressors, elevators, etc. A plant has been leased with about 10,000 sq. ft. of floor space. Parts of the work may be let out to contract later. E. W. Copeland is president; C. F. Wendland, Sr., treasurer, and W. A. Wendland, secretary.

Industrial News Items

Properties of the Eastern Brass & Ingot Co., Waterbury, Conn., have been purchased by Herman J. Weisman. The entire assets, including machinery, pumps, motors, tools, etc., together with a building, 60 x 200 ft., of concrete construction, will be resold. The piece of land 150 x 800 ft. will also be for sale.

Scale patterns, with capacity for a $100,000 business per year, will be sold by J. L. Lawrence, 5515 Locust Street, Philadelphia.

The Interstate Commerce Commission has directed the director-general of railroads to re-imburse the Wickwire-Spencer Steel Corporation, for excess rates on 57 carloads of soft coal shipped in September and October, 1919, from Leetonia, Ohio, to Harriet, N. Y. Reparation will include interest.

Auction of the Fulton Machine & Vise Co., maker of paper-mill machinery, Lowville, N. Y., which was scheduled for April 2, has been postponed until April 18, owing to the serious illness of A. E. Gebbie, receiver.

The Heating & Power Appliance Co., 200-210 Pleasant Street, Milwaukee, has filed a voluntary petition in bankruptcy. Liabilities are listed at $17,038, and assets of $48,516 are claimed. Machinery and tools are valued at $16,762. F. L. Hutchinson is president.

The American Machine & Foundry Co., builder of specialized machinery, has sold $2,000,000 15-year 6 per cent sinking fund bonds, dated April 1, to bankers who sold the issue to investors at 95 and accrued interest. The purpose of the issue is to provide funds to pay off bank loans and for additional capital needed in the expansion of its business.

The Avery Co., Peoria, Ill., large manufacturer of farm equipment, has filed a voluntary petition in bankruptcy. Assets are placed at more than $8,000,000, while liabilities exceed $6,000,000. The failure was attributed to the depression in the farm implement business.

The Minnesota Steel Co., Duluth, Minn., is installing new equipment and machinery, costing approximately $75,000, to be used in the manufacture of steel fence posts. The new department will be ready to start operation by May 1, and will have a capacity of about 200 tons daily, or approximately 45,000 posts.

The Wire Wheel Corporation, 1700 Elmwood Avenue, Buffalo, and the Packard Motor Car Co., Detroit, have been granted sole rights to the Cowles patented wheel by a decision handed down in United States District Court at Chicago. The Buffalo corporation, according to an announcement made by President George M. Williams, is now entitled to royalties upon every wire wheel demountable at the hub, and manufactured, used or sold since the Cowles patent was granted in 1914.

The Niagara Searchlight Co., Niagara Falls, N. Y., is expanding its organization to permit the manufacture of dry cell batteries. Machinery is being installed with a capacity of 10,000 batteries a day. Considerable plant expansion will take place beyond what has been done. Production of batteries will probably begin by May 1. The company will also manufacture batteries in New York, production beginning about July 1, with a capacity of 25,000 batteries per day.

Sale of the Mercer Motors Co. property at Trenton, N. J., to the Curran McDevitt Co., Philadelphia, on a bid of $40,000 has been ordered by Samuel D. Oliphant, referee in bankruptcy. Recent inventory placed the value of the plant at $70,000.

T. A. Tulin, president, Enameled Products Corporation, with general offices in New York and factory at Brooklyn, has leased a three-story building on Avenue A, in Birmingham, and is moving the works to that city. The corporation manufactures glazed enamel bath room fixtures. Upwards of two to three carloads of products are manufactured weekly. Proximity to material and labor, and favorable freight rates induced the removal to the Birmingham.

The American Car & Foundry Co., New York, has purchased the plants at Portland, Ore., and Seattle, Wash., of the Pacific Car & Foundry Co. The entire assets of the Pacific company exceed $2,250,000 and the physical value of the two plants including their machinery is estimated at approximately $900,000. It is understood that immediate enlargement of the Portland shop is contemplated.

The Yuba County Farm Bureau, Marysville, Cal., has tentative plans for the construction of a series of ice and refrigerating plants in different parts of the county.

Trade Changes

The Donner Steel Co., Inc., Buffalo, has opened a Cleveland office at 1156 Union Trust Building. H. C. Richardson is district sales manager and J. H. Graham is his assistant.

The Indianapolis Pressed Steel Co., Indianapolis, has moved to its new factory in Muncie, Ind., a modern steel and brick construction, which will afford three times the former floor space. The change will not interfere with production or deliveries. Equipment has been installed, doubling the previous capacity. The name of the company will be changed later to the Indiana Pressed Steel Co.

The Lancaster Steel Products Corporation, subsidiary of the General Motors Corporation, has moved its Buffalo office to Cleveland.

The Lawrence Aero Engine Corporation has consolidated with the Wright Aeronautical Corporation and is now located at Paterson, N. J.

The Ruggles-Klingemann Mfg. Co., 200 Devonshire Street, Boston, has been appointed exclusive New England representative of the Uehling Instrument Co., Paterson, N. J., manufacturer of CO_2 recorders and indicators.

William J. Clucas, district manager of the Lancaster Steel Products Corporation, subsidiary of the General Motors Corporation, has moved his office from Buffalo to the Leader Building, Cleveland.

The Bethlehem Steel Co. has moved its Cleveland sales office from the Guardian Savings & Trust Building to 2008 Union Trust Building.

The Moore Steam Turbine Corporation, Wellsville, N. Y., maker of centrifugal pumps and steam turbines, has opened a new branch office at 319 Third Avenue, Pittsburgh.

The Marlin-Rockwell Corporation, 402 Chandler Street, Jamestown, N. Y., which recently took over the business of the Gurney Ball Bearing Co., Jamestown, has elected the following officers: Henry K. Smith, president; Alfred C. Davis, vice-president; John H. Walters, treasurer. F. W. Gurney is chairman of the board.

Charles Hubbard & Co., formerly at 81 Fulton Street, New York, have moved to 17 Battery Place. They have been appointed representatives of the Howard Steel Corporation, Buffalo, in the sale of wrought iron rudders and stern frames, and will continue as representatives of several steel companies.

The Motch & Merryweather Machinery Co. has moved to 715 Penton Building, Cleveland.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.49c.
Swedish charcoal iron bars, base	7.00c.
Soft steel bars, base price	3.49c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.59c.
Channels, angles and tees under 3 in. x ¼ in., base	3.49c.
Steel plates, ¼ in. and heavier	3.59c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.55c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	4.05c.
Toe-calk, ½ x ⅜ in. and larger	4.50c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring steel	4.50c. to 7.50c.
Shafting and Screw Stock:	
Rounds	4.40c.
Squares, flats and hex	4.90c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c. to 75c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.34c.
No. 12	4.39c.
No. 14	4.44c.
No. 16	4.54c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.55c. to 4.70c.	.....
Nos. 22 and 24	4.70c. to 4.85c.	5.10c.
No. 26	4.75c. to 4.90c.	5.15c.
No. 28*	4.85c. to 5.00c.	5.25c.
No 30	5.05c. to 5.20c.	.....

Galvanized

	Per Lb.
No. 14	4.95c. to 5.10c.
No. 16	5.10c. to 5.25c.
Nos. 18 and 20	5.25c. to 5.40c.
Nos. 22 and 24	5.40c. to 5.55c.
No. 26	5.55c. to 5.70c.
No. 28*	5.85c. to 6.00c.
No. 30	6.30c. to 6.45c.

*No. 28 and lighter, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	—41	—24	½ in. Butt	— 4	+19
¾ in. Butt	—46	—32	¾ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Bolts and Screws

Machine bolts, cut thread, 45 and 10 to 50 and 10 per cent off list

Carriage bolts, cut thread, 35 to 35 and 10 per cent off list

Coach screws ..... 45 to 50 and 10 per cent off list

Wood screws, flat head iron, 75, 20, 10 and 7½ per cent off list

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright basic	4.50c. to 4.75c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18¼c. to 19¼c.
High brass wire	18¾c. to 19¾c.
Brass rods	16 c. to 17 c.
Brass tube, brazed	26¼c. to 27¼c.
Brass tube, seamless	22½c. to 23½c.
Copper tube, seamless	23¾c. to 24¾c.

Copper Sheets

Sheet copper, hot rolled, 21¾c. to 22¼c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
		80 lb.	$6.55	$6.30
		90 lb.	6.65	6.40
		100 lb.	6.75	6.50
IC $11.75	$9.50	IC	7.00	6.75
IX 13.25	11.50	IX	8.25	8.00
IXX 14.50	12.50	IXX	9.50	9.25
IXXX 15.50	13.75	IXXX	10.75	10.50
IXXXX 16.50	14.75	IXXXX	12.00	10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits pig	58c.
Bar	60c. to 65c.

Copper

Lake ingot	16 c.
Electrolytic	15½c.
Casting	14½c.

Spelter and Sheet Zinc

Western spelter	8c.
Sheet zinc, No. 9 base, casks	10¾c. open 11½c.

Lead and Solder*

American pig lead	10¾c. to 11¾c.
Bar lead	14c. to 15c.
Solder ½ and ½ guaranteed	40c.
No. 1 solder	38c.
Refined solder	34c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	75c. to 90c.
Commercial grade, per lb	35c. to 50c.
Grade D, per lb	25c. to 35c.

Antimony

Asiatic	13c. to 14c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb ..... 36c.

Old Metals

Demand is sluggish and the market is unsettled. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.25
Copper, heavy wire	10.75
Copper, light bottoms	9.00
Brass, heavy	6.50
Brass, light	5.00
Heavy machine composition	8.75
No. 1 yellow brass turnings	6.75
No. 1 red brass or composition turnings	8.25
Lead, heavy	7.00
Lead, tea	5.25
Zinc	4.00
Cast aluminum	17.00
Sheet aluminum	17.00